ALGEBRA HEART-TEST QUESTIONS (UNABRIDGED!)

by
Dr. J. Austin French

Test Questions for
Algebra by Heart

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HEART-TEST QUESTIONS
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Multiple Choice Test Questions for
<u>Algebra by Heart</u>
and for
<u>Supplementary Materials for Algebra by Heart</u>
by
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R.E.A.L. PUBLICATIONS

R.E.A.L. =

Righteousness Enhanced Accelerated Learning

"For He will finish the work, and cut it short in righteousness: because a short work will the Lord make upon the earth." Romans 9:28

R.E.A.L. PUBLICATIONS
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EXPLANATION OF THIS BOOK

THIS IS A TWO-PART BOOK

PART I

MULTIPLE CHOICE QUESTIONS THAT COME EXACTLY FROM ALGEBRA BY HEART

PART II

MULTIPLE CHOICE QUESTIONS THAT COME EXACTLY FROM SUPPLEMENTARY MATERIALS FOR ALGEBRA BY HEART (THIS BOOK CONTAINS WORKED HOMEWORK ASSIGNED IN ALGEBRA BY HEART)

SPECIAL THANKS TO:

God, for the eyes to see, wisdom, and graced fire to do this project.

My wife Belinda, for her oneness, love and support.

Alan McCowan and Winnie Bratcher, for seeing the need and availability of an online algebra course. This book is the missing ingredient that was needed to offer algebra online.

Georgetown College for providing funds for this project.

TRUTH GEM
WHAT A TEST TESTS

(Deut. 8:2) And you shall remember that the Lord your God led you all the way these forty years in the wilderness, to humble you and <u>test you to know what was in your heart</u>, whether you would keep His commandments or not.

Many people consider a test to be a soul searching experience. Your soul is your mind, will, and emotions. Many consider a test as a brain dump to reveal what was in your brain at the time. To a certain extent a test does test what is in the brain. But what a test really reveals for those with eyes to see is that a test reveals what is in the heart.

Do you have a heart on fire to study wisely? A test will reveal that. Do you have a heart on fire to be so established in what was in the will of **God** to be learned and was taught clearly that you know it nonnervously instinctively? A test will reveal that.

Do you have a heart that for all your life you have never been faithful enough to study regularly, wisely only spurts right before a test? A test will reveal that type of heart too.

In the book **<u>Truth Gems for Teacher and Student</u>** you are told many wise ways to study what is in the will of **God** for you to learn. There are many formal and informal tests of your heart to see if you do the wisdom in that book. Some hide behind beliefs that they learn differently when in truth they continue to not-learn (treat as one word) in the same old way.

Philip Derber has mentioned that you have to keep retaking the tests of life until you pass them. Until there is a change of heart you can only expect the same results as long as you live. For things to get better you need to change your heart for the good.

God is in the heart changing, forgiveness business. You can change in an instant by His power. **(Psalm 51:10) Create in me a clean heart, O God, and renew a steadfast spirit within me.**

WHY PENCIL AND BIG PRINT?

To "make it plain" (Hab 2:2). It is my desire to make the things taught to be easily mentally digestible. There are some wonderful meals fixed with love for me by my wife that are so blessed and digestible that I joke that the stomach can be by-passed and the food just be put into me intravenously! This book is intended to be like that for the mind...immediately absorbed by the mind.

This all began when I was teaching a class with computer generated notes. I then switched to pencil and big print. The response was unanimous; they liked the pencil and big print notes much better. It was said that when they did their homework, they had to recopy the computer generated notes to understand better, but with the pencil and big print notes they did not have to recopy them to understand.

A secondary reason for pencil and big print is that many texts are encyclopedic...containing far more information than can and needs to be consumed to know algebra excellently. So I go for the jugular and put in no more and no less than is needed to thrive mathematically. Hence, this is a micropedia, not an encyclopedia!

You are seeing the note-taking style that served me well in getting a math Ph.D. and beyond.

Another reason I use pencil and big print is that I believe there is an anointing of clarity that comes with these notes and it is known that the "anointing teaches you" (1 Jn 2:27).

Rather than this being a second rate, antiquated learning system, I am giving you absolutely the best I know for you to learn with wisdom and joy. Drink it in.

Austin French

A

MIGHTY MICROPEDIA

FROM THE

GENRE OF

MUSTARDSEEDAPEDIAS

MIGHTY MICROPEDIAS
BY R.E.A.L. EDUCATION

(See www.arealeducation.com)

TRUTH GEMS FOR TEACHER AND STUDENT by Dr. J. Austin French. This micropedia consist of 53 Truth Gems from the Word of God directed at teaching and learning. Each Truth Gem and its explanation take one page. Since God is the Most High, this means His teachings are the most high teachings. No one knows better than the Creator how man was made, what he needs, what is the best way to teach man, and what is the best way for man to learn. Many of these truth gems start out each teaching session in the Math by Heart trilogy described below.

ALGEBRA BY HEART by Dr. J. Austin French. This collection of two mighty micropedias consists of a micropedia text, a micropedia of supplementary materials, and DVDs of 53 teaching sessions. Both micropedias are free on the web or can be ordered on the web in paper copy or on one CD. The DVDs can be purchased from the web. This is a College Algebra course, which means it is a strong Algebra II course for high school. This is not what is called Intermediate Algebra (=Algebra I in high school) in some colleges.

ALGEBRA HEART-TEST QUESTIONS (UNABRIDGED!) by Dr. J. Austin French. This is a collection of 1131 multiple choice questions with answers. This tests the entire books Algebra by Heart and Supplementary Materials for Algebra by Heart. The questions come exactly from the texts. Each question has a reference to the location on the specific page of the text that the question covers (hope for fruitful study).

CALCULUS I BY HEART by Dr. J. Austin French. This collection of two mighty micropedias consists of a micropedia text, a micropedia of supplementary materials, and DVDs of 38 teaching sessions. This is a rigorous first course in calculus. It is a first college calculus course. It can be used for high school students who have finished Algebra I, Algebra II, and have had some trigonometry (trigonometry is taught in pre-calculus or advanced math courses in high school). The topic is differential calculus. Both micropedias are free on the web or can be ordered on the web in paper copy or on one CD. The DVDs can be purchased from the web.

LOGIC FOR UNDERSTANDING MATHEMATICS by Dr. J. Austin French and Dr. Earl Dennis. This collection of two mighty micropedias consists of a micropedia text, a micropedia of supplementary materials, and DVDs of 31 detailed teaching sessions. The mystery of how to do proofs is revealed. Logic is taught and then that connection to math proof is made plain. Proofs are illustrated in the area of elementary set theory. It is for the advanced high school student through college. Math maturity to have done excellently in Algebra II is the only recommended prerequisite background. Both micropedias are free on the web or can be ordered on the web in paper copy or on one CD. The DVDs can be purchased from the web.

EXPLANATION OF TEST-QUESTION FORMAT

Above each question is a notation like (7-108B). That means that this question comes from page 7-108 of the text Algebra II by Heart, and the B stands for Bottom of the page (T stands for Top and M stands for Middle). In understanding what is meant by 7-108, this means the 108th page of the text, Algebra II by Heart, and the 108th page of the text is in chapter 7.

The answers are in the back of this test-question book.

This test-question book is a component in a total immersion in clarity concept. The student is to read the text, Algebra II by Heart. DVDs teach the text. Students are then tested over the text. It is the testing-over-what-you-were-taught concept. This concept injects great hope in knowing what to study to prepare for the test and knowing the test will fairly test what you studied…so study in hope.

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PART I

PART II

PART I

MULTIPLE CHOICE QUESTIONS THAT COME EXACTLY FROM ALGEBRA BY HEART

(2-6B)
$N = \{1, 2, 3, \ldots\}$

① The set $\{x \mid x \in N \text{ and } x < 3\} =$

a) $\{0, 1, 2\}$ b) $\{1, 2, 3\}$
c) $\{1, 2\}$ d) $\{0, 1, 2, 3\}$
e) $\{\ldots, -1, 0, 1, 2\}$ f) None of these.

(2-8T)
② A repeating decimal (like $4.232323\ldots$) is a

g) rational number h) irrational number
k) none of these.

(2-8B)
③ To change $x = 4.1345345\ldots = 4.1\overline{345}$ to a fraction of integers:

$$\begin{aligned} 10000x &= 41345.345345\ldots \\ -\ 10x &= -\ \ \ 41.345345\ldots \\ \hline \end{aligned}$$

subtracting and solving for x gives $x =$

m) $\frac{41304}{9999}$ p) $\frac{41304.345}{9990}$ s) $\frac{41304.\overline{345}}{9990}$
w) $\frac{41304}{9990}$ z) None of these

(2-7m)

④ The number $\frac{0}{5}$ equals

a) 0 b) undefined c) none of these

(2-7B)

⑤ The number $.\overline{23}$ equals

a) $\frac{23}{100}$ b) .232323... c) none of these

(2-7m)

⑥ A fraction of the form $\frac{a}{b}$ where a is an integer and b is an integer and $b \neq 0$ is a

a) rational number b) irrational number

c) none of these.

⑦ (2-7T) The set $\{\ldots -3, -2, -1, 0, 1, 2, 3, \ldots\}$ is the set

d) of positive integers

e) of natural numbers

f) of integers

g) of rational numbers

h) of irrational numbers

m) none of these

(2-9T)
⑧ Which of the following is an irrational number?

a) -3.4 b) $\sqrt{2}$ c) $.232323\ldots$

d) $\frac{2}{3}$ e) None of these

(2-10T)
⑨ $\{1,2\}$ is a subset of which of the following. $\{1,2\} \subseteq$

f) $\{1,2,3,4\}$ g) $\{3,4\}$ h) $\{2,3,4\}$

k) $\{0,1,4\}$ m) None of these.

(2-12T)
⑩ What is the only set that $\frac{2}{3}$ is in?

n) N q) Q w) W y) Ir

(2-13B)
⑪ Let $A=\{2,3,4,5\}$ $B=\{3,5,6,7\}$ $A \cap B =$

a) $\{3,5\}$ b) $\{2,3,4,5,6,7\}$ c) $\{2,4\}$

d) $\{3,4,5\}$ e) None of these

(2-9 m)

⑫ A real number is a number that is either

a) a whole number or a rational number.
b) a negative integer or a rational number.
c) a rational number and a repeating decimal.
d) a rational number or an irrational number.

(2-10 m)

⑬ Which of the following is an element of $\{1,2\}$?

e) $\{2\}$

f) 2

g) $\{1,2\}$

h) none of these.

(2-10 m)

⑭ Which of the following is a subset of $\{1,2\}$?

m) $\{2\}$

p) 2

w) none of these.

(2-13T)

⑮ For the set definitions $\{x \mid x \in N \text{ and } x < 3\} = \{y \mid y \in N \text{ and } y < 3\} = \{z \mid z \in N \text{ and } z < 3\}$, x, y, and z are called

a) constants
b) irrational numbers
c) dummy variables.
d) the null set
e) none of these

(2-13 B)

⑯ Let $A = \{2, 3, 4, 5\}$ and $B = \{3, 5, 6, 7\}$ $A \cap B =$

f) $\{2, 3, 4, 5, 6, 7\}$
g) $\{3, 5\}$
h) $\{2, 4\}$
m) none of these

(2-14 B)

⑰ State completely the property: $2(x+3y) = (x+3y) \cdot 2$

p) distributive property
u) commutative property of multiplication
x) commutative property of addition
z) none of these

(2-15 m)

⑱ State completely the property:

$$5 + (3 + x) = 5 + (x + 3)$$

a) associative property of addition
b) distributive property
c) commutative property of multiplication
d) commutative property of addition
e) none of these

(2-15m)

⑲ State completely the property:

$$5 + (3(xy) + 2) = 5 + ((3x)y + 2)$$

f) commutative property of multiplication
g) distributive property
K) commutative property of addition
m) associative property of multiplication
p) associative property of addition
w) none of these

(2-15B)

⑳ What property is illustrated by $x \cdot 1 = x$?

a) additive identity
b) multiplicative identity
c) commutativity
d) none of these.

(2-15B)

㉑ What property is illustrated by: $x + 0 = x$

a) additive identity
b) multiplicative identity
c) additive inverse
d) multiplicative inverse
e) none of these

(2-16T)

㉒ According to the distributive property $a(b+c) =$

f) $a(c+b)$
g) $(b+c)a$
h) $(c+b)a$
m) $ab+ac$
p) none of these

(2-16M)

㉓ According to the distributive property $(e+f)(x+y) =$

a) $(f+e)(y+x)$
b) $(e+f)x + (e+f)y$
c) $(x+y)(e+f)$
d) $(f+e)(x+y)$
e) none of these.

(2-16B)

㉔ Which of the following is <u>NOT</u> the way $-x$ can be read?

f) the reciprocal of x
g) minus x
h) the negative of x
m) the opposite of x
p) none of these

(2-16B)

㉕ which of the following is the multiplicative inverse of x when $x \neq 0$.

q) $\frac{1}{x}$
s) $-x$
w) 1
x) none of these.

(2-16B)

㉖ Which of the following is BAD?

a) $\frac{0}{1}$
b) $\frac{1}{0}$
c) <u>both</u> a) and b)
d) none of these.

(2-17T)

27) TRUE OR FALSE: $\frac{a}{b} = a \cdot \frac{1}{b}$

t) TRUE

f) FALSE

(2-17M)

38) TRUE OR FALSE: $a - b = a + (-b)$

t) TRUE

f) FALSE

(2-17m)

29) The multiplicative inverse of $\frac{2}{3}$ is

e) $-\frac{2}{3}$

f) 0

g) 1

h) $\frac{3}{2}$

m) none of these

(3-19T)

30) Which of the following is equal to $-a$? $-a =$

p) $\frac{1}{a}$

s) $-1 \cdot a$

w) $-(-a)$

x) 0

z) none of these

(3-19 T)

㉛ which of the following is equal to $-(a-b)$? $-(a-b) =$

a) $-a-b$
b) $-(b-a)$
c) $b-a$
d) $-b-a$
e) none of these

(3-19 M)

㉜ which of the following is equal to $-\frac{a}{b}$? $-\frac{a}{b} =$

F) $\frac{-a}{b}$
G) $\frac{b}{a}$
H) $\frac{1}{\frac{a}{b}}$
J) none of these.

(3-19 M)

㉝ which of the following is equal to $\frac{a}{-b}$? $\frac{a}{-b} =$

K) $-\frac{b}{a}$
L) $\frac{-b}{-a}$
M) $\frac{-a}{b}$
P) $\frac{-a}{-b}$
R) none of these

(3-19 B)

㉞ which of the following is a correct reasoning sequence?

S) $\frac{x-y}{y-x} = \frac{\cancel{x-y}}{\cancel{y-x}} = \frac{1}{1} = 1$

T) $\frac{x-y}{y-x} = \frac{\cancel{x-y}}{\cancel{y-x}} = \frac{1-1}{1-1} = \frac{0}{0} = 0$

U) $\frac{x-y}{y-x} = \frac{x-y}{-(x-y)} = \frac{\cancel{x-y}}{-(\cancel{x-y})} = \frac{1}{-1} = -1$

W) $\frac{x-y}{y-x} = \frac{x-y}{-(x-y)} = \frac{\cancel{x-y}}{-(\cancel{x-y})} = \frac{1}{1} = 1$

X) none of these.

(3-19B)

㉟ Suppose $b = -5$. which of the following is true

A) $-b$ is negative

B) $-b = 5$

C) $-b = -5$

D) none of these

(3-20M)

㊱ SUPPOSE $x < y$. which of the following is true?

E) $y > x$

F) It is possible that $x = y$.

G) none of these.

(3-21B)

㊲ Absolute value: Suppose $a < 0$. which is true?

H) $|a| = -a$

J) $|a| = a$

K) $|a| = 0$

M) None of these.

(3-22M) Absolute value: Suppose $a < -2$ and
㊳ $b > 7$. which is true?

N) $\left| \underset{\underbrace{\text{neg} \cdot \text{neg}}_{\text{pos}}}{a \cdot b} \right| = a \cdot b$

P) $\left| \underset{\underbrace{\text{neg} \cdot \text{pos}}_{\text{neg}}}{a \cdot b} \right| = a \cdot b$

R) $\left| \underset{\underbrace{\text{neg} \cdot \text{pos}}_{\text{neg}}}{a \cdot b} \right| = -a \cdot b$

S) None of these

(3-22B)

(39) Absolute value: Suppose $a<-2$ and $b>7$. Which is true?

T) $\left|\underbrace{\underset{\text{neg}-\text{pos}}{a-b}}_{\text{pos}}\right| = a-b$

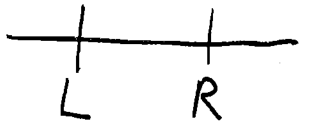
U) $\left|\underbrace{\underset{\text{neg}-\text{pos}}{a-b}}_{\text{neg}}\right| = a-b$

W) $|a-b| = \left|\underbrace{\underset{\text{neg}+\text{pos}}{a+(-b)}}_{\text{pos}}\right| = a+(-b)$

X) $|a-b| = \left|\underbrace{\underset{\text{neg}+\text{neg}}{a+(-b)}}_{\text{neg}}\right| = -(a-b) = b-a$

(3-22A, T)

(40) Suppose L = Left and R = Right and L < R



. Which is true?

A) Left − Right is negative

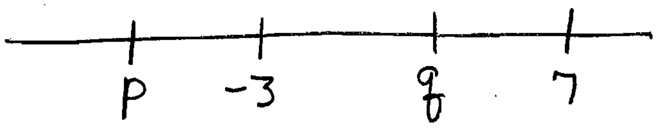
B) Left − Right is positive

C) It is impossible to determine whether Left − Right is positive or negative without knowing the exact values for L and R.

D) None of these.

(3-22A, B)

41. Suppose



Which of the following is true?

E) $|\underset{\underbrace{\text{neg}+\text{pos}}_{\text{pos}}}{p+3}| = p+3$

F) $|\underset{\underbrace{L+R}_{\text{pos}}}{p+3}| = p+3$

G) $|p+3| = |\underset{\underset{\text{neg}}{L-R}}{p-(-3)}| = p+3$

H) $|p+3| = |\underset{\underset{\text{neg}}{L-R}}{p-(-3)}| = -(p+3) = -p-3$

I) None of these

(3-23M)

42. The distance between -2 and 1 is equal to

J) $|-2-1| = |-3| = -(-3) = 3$

K) $-2-1 = -3$

L) $|-2+1| = |-1| = -(-1) = 1$

M) None of these

(3-24T)

(43) Which of the following is true?

N) $5+6\div2\cdot4=11\div2\cdot4=\frac{11}{2}\cdot4=\frac{44}{2}=22$

Q) $5+6\div2\cdot4=5+3\cdot4=8\cdot4=32$

P) $5+6\div2\cdot4=5+3\cdot4=5+12=17$

S) $5+6\div2\cdot4=5+6\div8=5+\frac{6}{8}=5+\frac{3}{4}=\frac{20+3}{4}=\frac{23}{4}$

T) None of these.

(3-24M)

(44) Which of the following is true?

E) $5-2x=3x$

N) $5-2x\neq3x$

(3-26M)

(45.) $\frac{3(x-2y)+5y}{2(y+2x)-y-7x}$ equals which of the following?

A) $\frac{3}{2}$

B) $\frac{5}{-7}$

C) 1

D) -1

E) 3

F) None of these.

(3-26M)

(46) Which of the following is true?

G) $\frac{3x-y}{y-3x} = 1$

H) $\frac{3x-y}{y-3x} = \frac{3x-y}{-(y-3x)}$

I) $\frac{3x-y}{y-3x} = \frac{3x-y}{-(3x+y)}$

K) None of G), H), and I)

(4-27T)

(47) $(-3)^2 =$

L) 9

M) -9

P) None of L) and M)

(4-27B)

(48) $-3^2 =$

Q) 9

R) -9

S) None of Q) and R)

(4-28M)

㊾ Which of the following is true about $-2^3-(3+(-5))^2$

T) $-2^3-(3+(-5))^2 = -2^3-(3^2+(-5)^2)$

U) $-2^3-(3+(-5))^2 = -2^3-(3^2-5^2)$

W) $-2^3-(3+(-5))^2 = -2^3-3^2-5^2$

X) $-2^3-(3+(-5))^2 = -2^3-(-2)^2$

Z) None of T), U), W), and X).

(4-28B)

㊿ $(-7)^0 =$

A) 1

B) -7

C) -1

D) 7

E) None of A), B), C), and D).

(4-29T)

(51) Which is true about $\frac{1}{a^n}$? $\frac{1}{a^n} =$

F) $-a^n$

G) $-1a^n$

H) a^{-n}

I) None of F), G), and H)

(4-29T)

(52) Which of the following is true about $\left(\frac{1}{2}\right)^{-3}$?

J) $\left(\frac{1}{2}\right)^{-3} = -8$

K) $\left(\frac{1}{2}\right)^{-3} = -\frac{1}{8}$

L) $\left(\frac{1}{2}\right)^{-3} = 8$

M) $\left(\frac{1}{2}\right)^{-3} = -8$

P) None of J), K), L), and M

(4-29 M)

(53) Which of the following is true about $a^m \cdot a^n$?

Q) $a^m \cdot a^n = a^{mn}$

R) $a^m \cdot a^n = (a^m)^n$

S) $a^m \cdot a^n = (a^n)^m$

T) $a^m \cdot a^n = a^{m+n}$

U) None of Q), R), S), and T).

(4-29 M)

(54) Which of the following is true about $\frac{a^m}{a^n}$? $\frac{a^m}{a^n} =$

A) a^{m+n}

B) a^{n-m}

C) a^{m-n}

D) $a^{m(-n)}$

E) None of A), B), C), and D).

(4-30 T)

(55) Which of the following is true about $(a^m)^n$? $(a^m)^n =$

F) a^{m+n}

G) $a^{\frac{m}{n}}$

H) $a^{\frac{n}{m}}$

I) a^{n-m}

K) None of F), G), H), and I).

(4-30 M)

(56) Suppose m is an integer. $(ab)^m =$

L) $a^m + b^m$

M) $(ba)^{-m}$

P) $a^m b^m$

Q) None of L), M), and P).

(4-30 M)

(57) Suppose n is an integer. $\frac{a^n}{b^n} =$

R) $-a^n b^n$

S) $(ab)^{-n}$

T) $[a(-b)]^n$

U) $\left(\frac{a}{b}\right)^n$

X) None of R), S), T), and U).

(4-31 T)

(58) Which derivation is correct about $\left(\frac{5x^2}{3y^{-3}}\right)^4$?

A) $\left(\frac{5x^2}{3y^{-3}}\right)^4 = \frac{(5x^2)^4}{(3y^{-3})^4} = \frac{5x^8}{3y^{-12}}$

B) $\left(\frac{5x^2}{3y^{-3}}\right)^4 = \frac{(5x^2)^4}{(3y^{-3})^4} = \frac{5x^6}{3y^1}$

C) $\left(\frac{5x^2}{3y^{-3}}\right)^4 = \frac{(5x^2)^4}{(3y^{-3})^4} = \frac{5^4x^6}{3^4y^1}$

D) $\left(\frac{5x^2}{3y^{-3}}\right)^4 = \frac{(5x^2)^4}{(3y^{-3})^4} = \frac{5^4x^8}{3^4y^{-12}}$

E) None of A), B), C), and D).

(4-31 B)

(59) Which derivation is correct about $\left(\frac{2x^{-4}y^3}{8x^5y^{10}}\right)^2$?

F) $\left(\frac{2x^{-4}y^3}{8x^5y^{10}}\right)^2 = \frac{4}{x^9y^7}$

G) $\left(\frac{2x^{-4}y^3}{8x^5y^{10}}\right)^2 = \frac{1}{4x^9y^7}$

H) $\left(\frac{2x^{-4}y^3}{8x^5y^{10}}\right)^2 = \left(\frac{1}{4x^9y^7}\right)^2$

I) $\left(\frac{2x^{-4}y^3}{8x^5y^{10}}\right)^2 = \left(\frac{1}{4x^1y^{13}}\right)^2$

K) None of F), G), H), and I).

(4-32M)

(60) $\left(\dfrac{2x^{3}y^{-5}}{16x^{-7}y^{-10}}\right)^{2}$ is equal to which of the following?

L) $8x^{10}y^{5}$

m) $\dfrac{x^{10}y^{5}}{8}$

N) $(8x^{10}y^{5})^{2}$

θ) $\left(\dfrac{x^{10}y^{5}}{8}\right)^{2}$

P) $\left(\dfrac{x^{-4}y^{-15}}{8}\right)^{2}$

R) $(8x^{-4}y^{-15})^{2}$

S) None of L), M), N), θ), P), R).

(4-32M)

(61) $\left(\dfrac{x^{10}y^{5}}{2^{3}}\right)^{2}$ is equal to which of the following?

T) $2^{6}x^{20}y^{10}$

U) $2^{5}x^{12}y^{7}$

W) $2^{-5}x^{12}y^{7}$

X) $2^{-6}x^{20}y^{10}$

Z) None of T), U), W), and X).

(4-32B)

(62) $\frac{1}{9}$ is equal to which of the following

A) 3^{-2}
B) 3^{2}
C) -3^{2}
D) None of A), B), and C).

(4-35M)

(63) 323.4 in scientific notation is

E) 3.234×10^{-2}
F) 3234.0×10^{1}
G) 3234.0×10^{-1}
H) None of these

(4-35B)

(64) .00045 in scientific notation is

J) 4.5×10^{3}
K) 4.5×10^{4}
L) 4.5×10^{-4}
M) 45.0×10^{-5}
N) None of J), K), L), and M).

(4-36 M)

(65) Which of the following is notation for $x^{\frac{1}{n}}$?

P) $\sqrt{x^n}$

Q) $\sqrt[\frac{1}{n}]{x}$

R) $\sqrt{x^{1/n}}$

S) $\sqrt[n]{x}$

T) None of P), Q), R), and S).

(4-36 B)

(66) $8^{\square} = 2$. For this to be correct, fill in the $\square$ with

U) 3

W) -3

X) $\frac{1}{3}$

Y) $-\frac{1}{3}$

Z) None of U), W), X), and Y).

(4-36 B)

(67) Why is $\sqrt[5]{32} = 2$?

A) Since $2^5 = 32$

B) Since $2^{1/5} = 32$

C) Since $32^5 = 2$

D) None of A), B), and C).

(4-37 T)

⑥⑧ When n is an <u>EVEN</u> positive integer and $x \geq 0$ and $\sqrt[n]{x} = b$, then

E) b is undefined
F) b must be greater than or equal to 0
G) b can be negative under certain circumstances
H) $\sqrt[n]{x}$ is undefined
I) NONE of E), F), G), and H).

(4-37M)

⑥⑨ $\sqrt[4]{16} =$

J) 2
K) -2
L) 4
M) None of J), K), and L).

(4-37B)

⑦⓪ $\sqrt{x}$ means

N) x^2
P) $\sqrt[\frac{1}{2}]{x}$
Q) $\sqrt[2]{x}$
R) None of N), P), Q).

(4-37B)

⑦① $\sqrt{25} =$

S) 5 (<u>and</u> -5 is not an acceptable alternate answer).

T) Either 5 or -5 are equally acceptable answers.

U) 25^2

W) None of S), T), and U).

(4-37M)

⑦② $\sqrt[4]{\frac{1}{16}} =$

A) $\frac{1}{4}$

B) 2

C) $\left(\frac{1}{2}\right)^4$

D) None of A), B), and C)

(4-38M)

⑦③ $\sqrt{x^2}$

E. Is always equal to x.

F. $-x$ when x is positive.

G. $|x|$

H. None of E), F), and G).

(4-39T)

(74) Suppose all component parts are defined and m and n are integers, then $a^{\frac{m}{n}} =$

J) $(a^{\frac{1}{m}})^n$

K) $(a^m)^n$

L) $(a^{\frac{1}{n}})^m$

M) None of these

(4-39T) $8^{2/3} =$

(75) N) $(8^2)^3$

P) $(8^3)^2$

Q) $(8^{1/3})^{1/2}$

R) $(8^{1/3})^2$

S) None of N), P), Q), and R)

(4-39M)

(76) $(-27)^{-4/3} =$

T) $\frac{1}{[(-27)^{1/3}]^4}$

U) $\frac{1}{[(-27)^{1/4}]^3}$

W) $[(-27)^{1/3}]^4$

X) None of T), U), and W).

(4-39 M)

⑦⑦ Which is true about $(-16)^{\frac{3}{4}}$?

A) it equals -8.
B) it equals $+8$
C) it equals -12
D) it is not defined.
E.) None of A), B), C), and D).

(4-39 T,B)

⑦⑧ True or False: $8^{\frac{2}{3}} = \left(8^{\frac{1}{3}}\right)^2$ and also $8^{2/3} = \left(8^2\right)^{1/3}$

T) True
F) False

(4-40 M)

⑦⑨ $\sqrt[5]{x^{15}} =$

G) x^3
H) x^{75}
J) $|x^3|$
K) None of G), H), and J)

(4-40 M)

⑧⓪ $\sqrt[4]{x^{12}} =$

L) x^3
M) x^{48}
P) $|x^3|$
Q) None of L), M), and P).

(4-41T)

(81) Which of the following is true?

R) It is always true $\sqrt[n]{ab} = \sqrt[n]{a}\,\sqrt[n]{b}$.

S) It is not always true that $\sqrt[n]{ab} = \sqrt[n]{a}\,\sqrt[n]{b}$, like when $a=-16$ and $b=-81$ and $n=4$; in that case $6 = \sqrt[4]{(-16)(-81)} \neq \underset{\uparrow}{\sqrt[4]{-16}}\;\underset{\uparrow}{\sqrt[4]{-81}}$

UNDEFINED

(4-41B)

(82) True or False: It is always true that

$$\sqrt[n]{\frac{a}{b}} = \frac{\sqrt[n]{a}}{\sqrt[n]{b}}.$$

T) True

F) False

(4-42M)

(83) $\dfrac{a}{b} + \dfrac{c}{b} =$

T) $\dfrac{ab+cb}{b}$

U) $\dfrac{a+c}{b+b}$

W) $\dfrac{a+c}{b}$

X) None of T), U), and W).

(4-42 M)

⑧④ $\frac{a}{b} \cdot \frac{c}{d} =$

A) $\frac{ad + bc}{bd}$

B) $\frac{ad \cdot cb}{bd}$

C) $\frac{ac}{bd}$

D) None of A), B), and C).

(4-42 B)

⑧⑤ $\frac{a}{b} + \frac{c}{d} =$

E) $\frac{a+c}{b+d}$

F) $\frac{ad + bc}{bd}$

G) $\frac{ad + bc}{b+d}$

H) None of E), F) and G).

(4-42 B)

⑧⑥ $\frac{a}{b} - \frac{c}{d} =$

J) $\frac{a-c}{b-d}$

K) $\frac{ad - bc}{bd}$

L) $\frac{ad - bc}{b-d}$

M) None of J), K), and L).

(87) (4-42B) $\dfrac{\frac{a}{b}}{\frac{c}{d}} =$

P) $\dfrac{ad}{bc}$

Q) $\dfrac{ac}{bd}$

R) None of P) and Q).

(88) (4-43M) $\frac{2}{5} - \frac{3}{7} =$

S) $\frac{-1}{2}$

T) $\frac{1}{35}$

U) $\frac{-1}{12}$

W) None of S), T) and U).

(89) (4-43M) $\dfrac{\frac{2}{5}}{\frac{8}{7}} =$

A) $\frac{16}{35}$

B) $\frac{7}{20}$

C) $\dfrac{2\cdot 8 + 5\cdot 7}{7\cdot 5}$

D) None of A), B), and C).

(4-43 T)

(90) $5\frac{2}{3} =$

E) $\frac{10}{3}$
F) $\frac{12}{3}$
G) $\frac{30}{3}$
H) None of these

(4-46 M)

(91) $\sqrt[3]{5x^6y^7} =$

J) $5x^2y^2\sqrt{y}$
K) $5x^2y^2\sqrt[3]{y}$
L) $x^2y^2\sqrt[3]{5}$
M) $x^2y^2\sqrt[3]{5y}$
P) None of J), K), L), and M)

(4-46 B)

(92) Which derivation of rationalizing the denominator is correct?

Q) $\frac{1}{\sqrt[3]{x}} = \frac{1}{\sqrt[3]{x}} \cdot \frac{\sqrt[3]{x^2}}{\sqrt[3]{x^2}} = \frac{\sqrt[3]{x^2}}{\sqrt[3]{x^3}} = \frac{\sqrt[3]{x^2}}{x}$

R) $\frac{1}{\sqrt[3]{x}} = \frac{1}{\sqrt[3]{x}} \cdot \frac{\sqrt{x^2}}{\sqrt{x^2}} = \frac{\sqrt{x^2}}{\sqrt[3]{x^3}} = \frac{\sqrt{x^2}}{|x|}$

S) $\frac{1}{\sqrt[3]{x}} = \frac{1}{x^{\frac{1}{3}}} = -x^{\frac{1}{3}}$

T) None of Q), R), and S.

(4-47T)

(93) For an expression like $\frac{2x^2}{\sqrt[5]{9x^2y^{18}}}$ to be put in <u>simplified form</u>, then by <u>definition</u> the answer must have no perfect n^{th} powers, be reduced as far as possible, and ________.
To complete the definition, fill in the blank with

u) the denominator is squared
w) the denominator is rationalized.
x) the numerator is rationalized
z) None of u), w), and x).

(4-47T)

(94) Which is the correct beginning to putting in simplified form?

A) $\frac{2x^2}{\sqrt[5]{9x^2y^{18}}} = \frac{2x^2}{\sqrt[5]{9x^2y^{18}}} \cdot \frac{\sqrt{9x^2y^{18}}}{\sqrt{9x^2y^{18}}}$

B) $\frac{2x^2}{\sqrt[5]{9x^2y^{18}}} = \frac{2x^2}{\sqrt[5]{3^2x^2y^{18}}} \cdot \frac{1}{\sqrt[5]{3^3x^3y^2}}$

C) $\frac{2x^2}{\sqrt[5]{9x^2y^{18}}} = \frac{2x^2}{\left(\sqrt[5]{3^2x^2y^{18}}\right)^5}$

D) $\frac{2x^2}{\sqrt[5]{9x^2y^{18}}} = \frac{2x^2}{\sqrt[5]{3^2x^2y^{18}}} \cdot \frac{\sqrt[5]{3^3x^3y^2}}{\sqrt[5]{3^3x^3y^2}}$

E) None of A), B), C), and D).

(4-47T)

(95) T OR F: $\dfrac{2x^2\sqrt[5]{27x^3y^2}}{3xy^4}$ is in simplified form.

T) TRUE
F) FALSE

(4-47T)

(96) Which of the following is correct?

G) $\dfrac{2x^2}{\sqrt[5]{3^2x^2y^{18}}}\cdot\dfrac{\sqrt[5]{3^3x^3y^2}}{\sqrt[5]{3^3x^3y^2}}=\dfrac{2x^2\sqrt[5]{3^3x^3y^2}}{\sqrt[5]{3^6x^6y^{36}}}$

H) $\dfrac{2x^2}{\sqrt[5]{3^2x^2y^{18}}}\cdot\dfrac{\sqrt[5]{3^{\frac{5}{2}}x^{\frac{5}{2}}y^{\frac{5}{18}}}}{\sqrt[5]{3^{\frac{5}{2}}x^{5/2}y^{\frac{5}{18}}}}=\dfrac{2x^2\sqrt[5]{3^{5/2}x^{5/2}y^{5/18}}}{\sqrt[5]{3^5x^5y^5}}$

J) $\dfrac{2x^2}{\sqrt[5]{3^2x^2y^{18}}}\cdot\dfrac{\sqrt[5]{3^3x^3y^2}}{\sqrt[5]{3^3x^3y^2}}=\dfrac{2x^2\sqrt[5]{3^3x^3y^2}}{\sqrt[5]{3^5x^5y^{20}}}$

K) None of G), H), and J).

(4-47M)

(97) $x^{-\frac{2}{3}}$ is which radical in the denominator in disguise?

L) $\dfrac{1}{\sqrt[3]{x^2}}$

M) $\dfrac{1}{\sqrt[2]{x^3}}$

P) $\dfrac{1}{\sqrt{x^{2/3}}}$

Q) None of L), M), and P).

(4-47B)

(98) Which is a correct beginning to putting in simplified form?

R) $\dfrac{5x^2\sqrt[4]{y^2}}{\sqrt[4]{9xy^5}} = \dfrac{5x^2\sqrt[4]{y^2}}{\sqrt[4]{9xy^5}} \cdot \dfrac{\sqrt{9xy^5}}{\sqrt{9xy^5}}$

S) $\dfrac{5x^2\sqrt[4]{y^2}}{\sqrt[4]{9xy^5}} = \dfrac{5x^2\sqrt[4]{y^2}}{\sqrt[4]{3^2xy^5}} \cdot \dfrac{\sqrt[4]{3^2x^3y^3}}{\sqrt[4]{3^2x^3y^3}}$

T) $\dfrac{5x^2\sqrt[4]{y^2}}{\sqrt[4]{9xy^5}} = \dfrac{5x^2\left(\sqrt[4]{y^2}\right)^4}{\left(\sqrt[4]{9xy^5}\right)^4}$

U) None of R), S), and T).

(4-47B), (4-48T)

(99) Which of the following is correct?

A) $$\frac{5x^2\sqrt[4]{y^2}}{\sqrt[4]{3^2xy^5}}\cdot\frac{\sqrt[4]{3^2x^3y^3}}{\sqrt[4]{3^2x^3y^3}} = \frac{5x^2\sqrt[4]{3^2x^3y^6}}{\sqrt[4]{3^4x^3y^{15}}}$$

B) $$\frac{5x^2\sqrt[4]{y^2}}{\sqrt[4]{3^2xy^5}}\cdot\frac{\sqrt[4]{3^{4/2}x^4y^{4/5}}}{\sqrt[4]{3^{4/2}x^4y^{4/5}}} = \frac{5x^2\sqrt[4]{3^{4/2}x^4y^{8/5}}}{\sqrt[4]{3^4x^4y^4}}.$$

C) $$\frac{5x^2\sqrt[4]{y^2}}{\sqrt[4]{3^2xy^5}}\cdot\frac{\sqrt[4]{3^2x^3y^3}}{\sqrt[4]{3^2x^3y^3}} = \frac{5x^2\sqrt[4]{3^2x^3y^5}}{\sqrt[4]{3^4x^4y^8}}$$

D) None of A), B), and C).

(4-48T)

(100) TRUE OR FALSE: $\sqrt[4]{3^2x^3y^5}$ is in simplified form.

T) True

F) False

(4-48M)

(101) TRUE OR FALSE: $\sqrt{9} + \sqrt{16} = \sqrt{9+16}$

T) TRUE
F) FALSE

(4-48M)

(102) $\sqrt{27} - 5\sqrt{3} + x\sqrt{3} =$

G) $\sqrt{22} - \sqrt{3} + x\sqrt{3}$
H) $\sqrt{27} - \sqrt{15} + x\sqrt{3}$
J) $\sqrt{27} - \sqrt{12} + x\sqrt{3}$
K) None of G), H), and J).

(4-48M)

(103) TRUE OR FALSE: $2 + 3\sqrt{x} = (2+3)\sqrt{x}$

T) TRUE
F) FALSE

(4-48B)

(104) $\sqrt{27} - 5\sqrt{3} + x\sqrt{3} =$

L) $(x+2)\sqrt{3}$
M) $(x-2)\sqrt{3}$
P) $(2-x)\sqrt{3}$
Q) None of L), M), and P).

(4-48B)

(105) $5\sqrt{x}+\sqrt{18x^3} =$ (when $x \ge 0$)

R. $6\sqrt{18x^4}$

S. $5\sqrt{x+18x^3}$

T. $(5+3\sqrt{x})x$

U. $(5+3\sqrt{2}\,x)\sqrt{x}$

W. None of R), S), T), and U).

(5-50T)

(106) $\frac{2}{3}x^5+\sqrt{2}\,x^3+7x-\pi$ is

A) a polynomial expression.

B) is not a polynomial because of the irrational coefficient $\sqrt{2}$.

C) is not a polynomial because of the irrational constand $-\pi$.

D) None of A), B), and C).

(5-50m)

(107) $4x^{\frac{2}{3}}+7x-1$ is

E) a polynomial expression.

F) not a polynomial because of the $\frac{2}{3}$ exponent

G) is a coefficient

H) is a term

J) None of E), F), G), and H).

(5-50M)

(108) $5\sqrt{x} + 4$ is

K) a polynomial expression.
L) not a polynomial expression.
M) a term.
θ) a coefficient.
P) None of K), L), M), and θ).

(5-50T)

(109) $4x^5$

Q) is a polynomial expression.
R) is not a polynomial expression because it is too short.
S) is a coefficient.
T) None of Q), R), and S).

(5-50M)

(110) $\frac{2}{x^2+7x}$ is

U) a polynomial expression.
W) not a polynomial expression.
X) a term.
Z) None of U), W), and X).

(5-50 B)

(111) For the polynomial expression
$a_n x^n + a_{n-1} x^{n-1} + a_{n-2} x^{n-2} + \cdots + a_2 x^2 + a_1 x + a_0$,

A) $a_n x^n$ is a term.
B) $a_n x^n$ is a coefficient.
C) $a_n x^n$ is scientific notation.
D) None of A), B), and C).

(5-50B)

(112) For the polynomial expression
$a_n x^n + a_{n-1} x^{n-1} + a_{n-2} x^{n-2} + \cdots + a_2 x^2 + a_1 x + a_0$,

E) a_n is a term.
F) a_n is a coefficient.
G) is a perfect n^{th} power.
H) None of E), F), and G).

(5-50B)

(113) The exponents on the variable for a polynomial expression

J) can be any rational number.
K) can be any real number.
L) can be any integer.
M) can be any whole number.
P) None of J), K), L), and M).

(5-51 T)

(114) $3x^5$ is a

Q) quadratic expression
R) binomial expression
S) trinomial expression
T) None of Q), R), and S).

(5-51 T)

(115) An example of a monomial polynomial is

U) $x+1$
W) $1x^2+1$
X) $7x^3$
Z) None of U), W), and X).

(5-51 T)

(116) An example of a binomial polynomial is

A) $2x^2$
B) $5x^2+2x-1$
C) $\frac{2}{3}x^3-7$
D) None of A), B), and C).

(5-51T)

(117) $5x^2 + 2x - 1$ is a

E) binomial expression
F) trinomial expression
G) coefficient.
H) None of E), F), and G).

(5-51M)

(118) The degree of $-7x^3 + 4x^{10} - 3$ is

J) 3
K) 10
L) -7
M) None of J), K), and L).

(5-51B)

(119) Which is a linear expression?

N) 2
O) $5x+2$
P) $5x^2-3x+7$
R) $3x^5$
S) None of N), O), P), and R).

(5-51B)

(120) What type of expression is $5x^2 - 3x + 7$?

T) Linear
U) Quadratic
W) Cubic
X) Binomial
Z) None of T), U), W), and X).

(5-51B)

(121) What is the degree of a quadratic expression?

A) 2
B) 4
C) 3
D) None of A), B), and C).

(5-51B)

(122) Which of these is a cubic polynomial?

E) $5x^2 - 3x + 7$
F) $3x^5$
G) $4x^3 - 7x + 6$
H) None of E), F), and G)

(5-51)

(123) Which of the following is a cubic binomial?

J) $4x^3-7x+6$

K) $7x^3$

L) $\frac{2}{3}x^3-7$

M) None of J), K), and L)

(5-52T)

(124) Subtraction of polynomials:

$(5x^2-7x)-(4x^2-3x+2)=$

N) $x^2-10x+2$

O) $9x^2-10x+2$

P) x^2-4x+2

R) x^2-4x-2

S) None of N), O), P), and R).

(5-52T)

(125) Subtraction of polynomials:

$(5x^2-7x)-(4x^2-3x+2)=$

T) $5x^2-7x-4x^2-3x+2$

U) $5x^2-7x+4x^2-3x+2$

W) $5x^2-7x-4x^2+3x-2$

X) None of T), U), and W).

(5-52M)

(126) Multiplying polynomials: $3x^2(5x^3-2x+7)=$

A) $15x^5-6x^3+21x^2$

B) $15x^6-6x^2+7x^2$

C) $15x^5-2x+7$

D) None of A), B), and C).

(5-52B)

(127) Multiplying Polynomials:

$(3x^2-2)(4x^2-3x+6)=$

A) $12x^4+9x^3+10x^2+6x-12$

B) $12x^4-9x^3+10x^2-6x+12$

C) $12x^4-9x^3-10x^2+6x-12$

D) $12x^4-9x^3+10x^2+6x-12$

E) None of A), B), C), and D).

(5-52B)

(128) Multiplying Polynomials: Distributivity.

$(3x^2-2)(4x^2-3x+6)=(3x^2-2)(4x^2)+(3x^2-2)(\underline{\quad})$ $+(3x^2-2)(6)$. Fill in the blank ⟶

F) $3x$

G) $-3x$

H) $4x^2$

J) None of F), G), and H).

(5-53)

(129) Multiplying polynomials:

$$\begin{array}{r} 4x^2-3x+6 \\ 3x^2-2 \\ \hline 12x^4+\square\ +18x^2 \qquad\qquad \\ -8x^2+6x-12 \\ \hline 12x^4+\square\ +10x^2+6x-12 \end{array}$$

The boxes are filled in with the same number and that number is:

K) $0x$

L) $-9x^2$

M) $-9x^3$

P) None of K), L), and M).

(5-53M)

(130) $(x+3)(2x-6) =$

Q) $2x^2-18$

R) $2x^2+12x-18$

S) $2x^2-12x-18$

T) None of Q), R), and S).

(5-53M)

(131) $(2x-5)(x+4) =$

u) $2x^2 - 3x - 20$
w) $2x^2 - 20$
x) $2x^2 + 3x + 20$
z) None of these.

(5-53B)

(132) $a^2 + 2ab + b^2 =$

A) $(a+b)(a-b)$
B) $(a+b)^2$
C) $(a-b)^2$
D) None of A), B), and C).

(5-53B)

(133) $(a+b)^2 =$

E) $a^2 + b^2$
F) $a^2 + ab + b^2$
G) $a^2 + 2ab + b^2$
H) None of E), F), and G).

(5-54T)

(134) $(a-b)^2 =$

J) $a^2 - b^2$
K) $a^2 + b^2$
L) $a^2 - ab + b^2$
M) $a^2 - 2ab + b^2$
N) None of J), K), L), and M).

(5-54M)

(135) $(3x-4)^2 =$

P) $9x^2 - 16$
Q) $9x^2 + 11$
R) $(3x)^2 - (3x)(4) + 16$
S) $(3x)^2 - 2(3x)(4) + 16$
T) None of P), Q), R), and S).

(5-54B)

(136) $a^2 - b^2 =$

u) $(a-b)(a-b)$
w) $(a+b)(a-b)$
x) $(a+b)^2$
z) None of u), w), and x).

(5-54B)

137 $(2y-5)(2y+5) =$

A) $2y^2 - 25$
B) $4y^2 - 20y - 25$
C) $4y^2 - 25$
D) None of A), B), and C).

(5-54B)

138 $(x^3-7)(x^3+7) =$

E) $x^6 - 49$
F) $x^9 - 49$
G) $x^6 - 14x^3 - 49$
H) None of E), F), and G).

(5-57T)

139 $(3+\sqrt{6})(3-\sqrt{6}) =$

J) $6 - 6$
K) $9 - 6$
L) $3 - 6\sqrt{6} - 6$
M) $3 - 6\sqrt{6} + 6$
N) None of J), K), L), and M).

(5-57T)

(140) To rationalize the denominator in $\frac{5}{3+\sqrt{6}}$, the initial step taught was

P) $\frac{5}{3+\sqrt{6}} = \frac{5}{3+\sqrt{6}} \cdot \frac{3+\sqrt{6}}{3+\sqrt{6}}$

Q) $\frac{5}{3+\sqrt{6}} = \frac{5}{3+\sqrt{6}} \cdot \frac{1}{3-\sqrt{6}}$

R) $\frac{5}{3+\sqrt{6}} = \frac{(5)^2}{(3+\sqrt{6})^2}$

S) $\frac{5}{3+\sqrt{6}} = \frac{5}{3+\sqrt{6}} \cdot \frac{3-\sqrt{6}}{3-\sqrt{6}}$

T) None of P), Q), R), and S).

(5-57B)

(141) To rationalize the denominator in $\frac{3+\sqrt{5}}{\sqrt{2}-\sqrt{3}}$, the initial step as taught was to multiply the numerator and denominator by

U) $\sqrt{2}+\sqrt{3}$

W) $\sqrt{2}-\sqrt{3}$

X) the square of the numerator and the denominator.

Z) None of U), W), and X).

(5-57B)

(142) Which is the correct derivation step in rationalizing the denominator?

A) $\frac{3+\sqrt{5}}{\sqrt{2}-\sqrt{3}} \cdot \frac{\sqrt{2}+\sqrt{3}}{\sqrt{2}+\sqrt{3}} = \frac{3\sqrt{2} + \sqrt{5}\sqrt{3}}{(\sqrt{2})^2 + (\sqrt{3})^2}$

B) $\frac{3+\sqrt{5}}{\sqrt{2}-\sqrt{3}} \cdot \frac{\sqrt{2}+\sqrt{3}}{\sqrt{2}+\sqrt{3}} = \frac{3\sqrt{2} + \sqrt{5}\sqrt{3}}{(\sqrt{2})^2 - (\sqrt{3})^2}$

C) $\frac{3+\sqrt{5}}{\sqrt{2}-\sqrt{3}} \cdot \frac{\sqrt{2}+\sqrt{3}}{\sqrt{2}+\sqrt{3}} = \frac{3\sqrt{2}+3\sqrt{3}+\sqrt{5}\sqrt{2}+\sqrt{5}\sqrt{3}}{(\sqrt{2})^2-(\sqrt{3})^2}$

D) None of A), B), and C).

(5-58 m)

(143) Polynomial division: $\frac{3x^7+4x^3-5}{2x^2} =$

E) $\frac{3}{2}x^9 + 2x^5 - \frac{5}{2}x^{-2}$

F) $\frac{3}{2}x^9 + 2x^5 - \frac{5}{2}x^2$

G) $\frac{3}{2}x^5 + 2x - \frac{5}{2x^2}$

H) $x^5 + 2x - 3x^{-2}$

I) None of E), F), G), and H).

(5-59T)

(144) To begin the long division process

$$\begin{array}{r|l} & \boxed{} \\ \hline 2x^2+3x-2 & 8x^4-4x^3-20x^2+3x-11 \end{array}$$

the first term is to be put in the box. What is that first term?

J) $6x^2$
K) $-6x^2$
L) $4x^2$
M) $-4x^2$
Θ) None of J), K), L), and M).

(5-59T)

(145) As you press on in the long division process

$$\begin{array}{r|l} & 4x^2+\boxed{} \\ \hline 2x^2+3x-2 & 8x^4-4x^3-20x^2+3x-11 \\ & \underline{\ominus\, 8x^4 \overset{\ominus}{+} 12x^3 \overset{\oplus}{-} 8x^2} \end{array}$$

What term is put in the box for the second term of your answer?

P) $-6x$
Q) $6x$
R) $-16x$
S) $16x$
T) $-8x$
U) $8x$
W) None of P), Q), R), S), T), and U).

(5-59)

(146) Long division of $\dfrac{8x^4-4x^3-20x^2+3x-11}{2x^2+3x-2} = \dfrac{T}{B}$

gives
$$\begin{array}{r} 4x^2-8x+6 \\ 2x^2+3x-2\,\overline{)\,8x^4-4x^3-20x^2+3x-11} \end{array},$$
with remainder $-31x+1$.
When put in $\dfrac{T}{B} = Q + \dfrac{R}{B}$ form it is

A) $\dfrac{8x^4-4x^3-20x^2+3x-11}{2x^2+3x-2} =$
$$\frac{4x^2-8x+6}{2x^2+3x-2} + (-31x+1)$$

B) $\dfrac{8x^4-4x^3-20x^2+3x-11}{2x^2+3x-2} =$
$$4x^2-8x+6 + \frac{(-31x+1)}{2x^2+3x-2}$$

C) $\dfrac{8x^4-4x^3-20x^2+3x-11}{2x^2+3x-2} =$
$$(4x^2-8x+6)(2x^2+3x-2) + (-31x+1)$$

D) $8x^4-4x^3-20x^2+3x-11 =$
$$(4x^2-8x+6)(2x^2+3x-2) + (-31x+1)$$

E) None of A), B), C), and D).

(5-60T)

(147) when beginning the long division process for $\frac{x^3-8}{x-2}$ as taught, how is each box filled in?

$$x-2\overline{)\,x^3+\square x^2+\square x-8}$$

F) Fill in both boxes with 0.

G) Fill 1st box with +1; fill 2nd box with -1.

H) Fill in both boxes with 1.

J) None of F), G), and H).

(5-60)

(148) The long division $x-2\overset{x^2+2x+4}{\overline{)\,x^3+0x^2+0x-8}}$ gives a remainder of 0. This means that x^3-8 factors into

K) $(x^2+2x+4)(x^3-8)$

L) $(x^2+2x+4)(x-2)$

M) $(x-2)(x^3-8)$

O) None of K), L), and M).

(5-60T)

(149) When you press on in the long division process

$$\begin{array}{r} x^2+\boxed{} \\ x-2\,\overline{)\,x^3+0x^2+0x-8} \\ \ominus x^3 \overset{\oplus}{-} 2x^2 \\ \hline \end{array}$$

what term is put in the box for the second term of your answer?

P) x

Q) $-x$

R) $2x^2$

S) $-2x^2$

T) None of P), Q), R), and S).

(5-62T)

(150) What is the blank filled in with to complete the factoring:

$$9x^4-3x^3+6x^2 = 3x^2(\underline{\qquad\qquad})$$

U) $3x^2-3x+6$

W) $3x^2-3x^3+6x^2$

X) $3x^2-x+2$

Z) None of U), W), and X).

(5-62 T)

(151) GROUP, THEN FACTOR:

$(x^2+3)x-(x^2+3)5$ factors into

A) Irreducible, does not factor.

B) $(x^2+3)(x)(-5)$

C) $(x^2+3)(x-5)$

D) None of A), B), and C).

(5-62 M)

(152) GROUP, THEN FACTOR:

$x^3+3x+4x^2+12=(x^3+3x)+(4x^2+12)$

$=(\_\_\_\_\_)x+(\_\_\_\_\_)4$. What fills in the blanks?

E) Fill in both blanks with $x+3$.

F) Fill in the first blank with $x+3$ and the second blank with x^2+3.

G) Fill in both blanks with x^2+3.

H) None of E), F), and G).

(5-62 B) GROUP, THEN FACTOR:

(153) TRUE OR FALSE:

$(p-q)w+(q-p)b=(p-q)w-(p-q)b$

T) True

F) False

(5-62B)

(154) GROUP, THEN FACTOR:

$pw + qb - qw - pb = (pw - qw) + (qb - pb)$

$= (\_\_\_\_)w + (\_\_\_\_)b$. What fills in the blanks?

J) Fill in the first blank with $p-q$ and the second blank with $q-p$.

K) Fill in both blanks with $p-q$.

L) Fill in both blanks with $q-p$

M) None of J), K), and L).

(5-62B)

(155) GROUP, THEN FACTOR: $pw+qb-qw-pb$ factors into

N) $(p-q)(b-w)$

O) $(q-p)(w-b)$

P) $(p+q)(w-b)$

R) $(p-q)(w-b)$

S) None of N), O), P), and R).

(5-64)

(156) Factoring $6x^2+13x+5$ into $(3x+\_\_)(2x+\_\_)$

T) Both blanks have to be filled in with positive numbers.

U) It is possible that both blanks could be filled in with negative numbers

W) It is possible to fill in one blank with a positive number and one with a negative number.

X) None of T), U), and W).

(5-65)

(157) To factor $6x^2-11x+5$ into the product of two linear factors with integer coefficients, you get

A) $(6x-1)(x-5)$
B) $(3x-1)(2x-5)$
C) Impossible, irreducible over the integers.
D) None of A), B), and C).

(5-66)

(158) To factor $6x^2-13x-5$ into the product of two linear factors with integer coefficients, you get

E) $(6x+1)(x-5)$
F) $(3x-1)(2x+5)$
G) Impossible, irreducible over the integers.
H) None of E), F), and G).

(5-67)

(159) A way to factor $-6x^2+13x+5$ is to 1st factor a minus out to get $-(6x^2-13x-5)$. Next factor $6x^2-13x-5$. The final answer for factoring the original $-6x^2+13x+5$ into the product of two linear factors is

J) $(3x+1)(2x-5)$
K) $(3x+1)(-2x-5)$
L) $(3x+1)(-2x+5)$
M) Impossible, irreducible over the integers.
P) None of J), K), L), and M).

(5-67B)

(160) To factor x^2+x+1 into the product of two linear factors with integer coefficients, you get

Q) $(x+1)(x+1)$
R) $(x+1)(x-1)$
S) $(x-1)(x-1)$
T) Impossible, irreducible over the integers.
U) None of Q), R), S), and T).

(5-69T)

(161) To factor $6x^2-17x+5$ into the product of 2 linear factor with integer coefficients by the reduce to "group then factor" method, you first need to find two numbers whose

A) sum is -17 and whose product is 11.
B) sum is 30 and whose product is -17.
C) sum is -17 and whose product is 5.
D) sum is -17 and whose product is 30.
E) None of A), B), C), and D).

(5-69M)

(162) To begin, as taught, factoring $6x^2-17x+5$ into the product of 2 linear factors by the reduce to "group then factor" method, the first step was $6x^2-17x+5=$

F) $6x^2-(15-2)x+5$
G) $6x^2+(-15,-2)x+5$
H) $6x^2+(-15-2)x+5$
J) None of F), G), and H).

(5-69B)

(163) Some initial derivation of factoring $6x^2-17x+5$ by the reduce to "group, then factor" method is

$$6x^2-17x+5 =$$
$$6x^2+(-15-2)x+5 =$$
$$6x^2-15x-2x+5 =$$

which is a correct next line in the derivation?

K) $(6x^2-15x)-(2x+5)$

L) $(6x^2-15x)+(2x-5)$

M) $(6x^2-15x)+(-2x-5)$

O) $(6x^2-15x)-(2x-5)$

P) None of K), L), M), and O)

(5-70T)

(164) To factor $6x^2-11x+5$ into the product of 2 linear factors with integer coefficients by the reduce to "group, then factor" method, you first need to find two numbers whose

A) sum is -11 and whose product is **30**.

B) sum is 30 and whose product is -11.

C) sum is -11 and whose product is 5

D) sum is -11 and whose product is 11

E) None of A), B), C), and D).

(5-70 T)

(165) To begin, as taught, factoring $6x^2-11x+5$ into the product of 2 linear factors by the reduce to "group, then factor" method, the first step was $6x^2-11x+5=$

F) $6x^2+(-6,-5)x+5$

G) $6x^2+(-6-5)x+5$

H) $6x^2-(6-5)x+5$

J) None of F), G), and H).

(5-70 M)

(166) Some initial derivation of factoring $6x^2-11x+5$ by the reduce to "group, then factor" method is

$$6x^2-11x+5=$$
$$6x^2+(-6-5)x+5=$$
$$6x^2-6x-5x+5=$$

what is a correct next line in the derivation?

K) $(6x^2-6x)-(5x+5)$

L) $(6x^2-6x)-(5x-5)$

M) $(6x^2-6x)+(5x-5)$

O) $(6x^2-6x)+(-5x-5)$

P) None of K), L), M), and O)

(5-71T)

167 $4x^2+12x+9 =$

Q) $(2x+3)^2$
R) $(4x+9)^2$
S) $(2x+3)(2x-3)$
T) $(2x-3)^2$
U) None of Q), R), S), and T).

(5-71T)

168 $4x^2-12x+9 =$

V) $(2x+3)^2$
W) $(2x-3)^2$
X) $(2x+3)(2x-3)$
Y) $(4x-9)^2$
Z) None of V), W), X), and Y).

(5-71M)

169 $4x^2-9 =$

A) $(2x-3)^2$
B) $(4x-9)^2$
C) $(2x+3)(2x-3)$
D) $(-2x+3)^2$
E) None of A), B), C), and D).

(5-71B)

(170) $a^3-b^3=$

F) $(a-b)(a^2-ab+b^2)$
G) $(a-b)(a^2+ab+b^2)$
H) $(a-b)(a^2+2ab+b^2)$
J) $(a+b)(a^2-ab-b^2)$
K) None of F), G), H), and J).

(5-72T)

(171) $8x^3-27y^3=$

L) $(2x-3y)(4x^2+6xy+9y^2)$
M) $(2x-3y)(2x^2+12xy+3y^2)$
θ) $(2x-3y)(4x^2-6xy+9y^2)$
P) $(2x+3y)(4x^2-6xy+9y^2)$
R) None of L), M), θ), and P).

(5-72M)

(172) $x^{12}-y^{12}=$

S) $(x^3-y^3)(x^4+y^4)$
T) $(x^6-y^6)^2$
U) $(x^4)^3-(y^4)^3$
V) $(x^6)^6-(y^6)^6$
W) None of S), T), U), and V)

(5-72M)

173 $x^{12}-y^{12}=(x^4)^3-(y^4)^3=$

A) $(x^4-y^4)((x^4)^2-x^4y^4+(y^4)^2)$
B) $(x^4-y^4)((x^4)^2+x^4y^4+(y^4)^2)$
C) $(x^4+y^4)((x^4)^2-2x^4y^4+(y^4)^2)$
D) $(x^4+y^4)((x^4)^2+2x^4y^4+(y^4)^2)$
E) None of A), B), C), and D).

(5-72M)

174 $x^{12}-y^{12}=(x^4)^3-(y^4)^3=(x^4-y^4)((x^4)^2+x^4y^4+(y^4)^2)=$

F) $(x^2-y^2)^2(x^8+x^4y^4+y^8)$
G) $(x^2-y^2)^2(x^6+x^4y^4+y^6)$
H) $(x^2-y^2)(x^2+y^2)(x^8+x^4y^4+y^8)$
J) $(x^2-y^2)(x^2+y^2)(x^6+x^4y^4+y^6)$
K) None of F), G), H), and J).

(5-72M)

175 $x^{12}-y^{12}=(x^4)^3-(y^4)^3=(x^4-y^4)((x^4)^2+x^4y^4+(y^4)^2)=$
$(x^2-y^2)(x^2+y^2)(x^8+x^4y^4+y^8)=$

L) $(x-y)(x+y)(x^2+y^2)(x^8+x^4y^4+y^8)$
M) $(x-y)^2(x+y)^2(x^8+x^4y^4+y^8)$
O) $(x-y)(x+y)(x+y)^2(x^8+x^4y^4+y^8)$
P) $(x-y)^2(x^2+y^2)(x^8+x^4y^4+y^8)$
R) None of L), M), O), and P).

(5-72M)

(176) $a^3+b^3 =$

S) $(a-b)(a^2+ab+b^2)$

T) $(a+b)(a^2-2ab+b^2)$

U) $(a+b)(a^2-2ab-b^2)$

w) $(a+b)(a^2-ab+b^2)$

x) None of S), T), U), and w).

(5-72B)

(177) $8x^3+27y^3 = (2x)^3+[3y]^3 =$

A) $((2x)+[3y])[(2x)^2-2(2x)[3y]+[3y]^2]$

B) $((2x)+[3y])[(2x)^2-(2x)[3y]+[3y]^2]$

c) $((2x)+[3y])[(2x)^2-2(2x)[3y]-[3y]^2]$

D) $((2x)-[3y])[(2x)^2+(2x)[3y]+[3y]^2]$

E) None of A), B), C), and D)

(5-72B)

(178) $x^6+y^6=$

F) $((x^2)+[y^2])[(x^2)^2-(x^2)[y^2]+[y^2]^2]$

G) $((x^2)+[y^2])[(x^2)^2-2(x^2)[y^2]+[y^2]^2]$

H) $((x^2)+[y^2])[(x^2)^2-(x^2)[y^2]-[y^2]^2]$

J) $((x^2)-[y^2])[(x^2)^2+2(x^2)[y^2]+[y^2]^2]$

K) None of F), G), H), and J).

(5-74T)

⑰⑨ Factoring: $-8x^7+8x = -8x(x^6-1) =$

L) $-8x(x^3-1)^2$

M) $-8x(x^2-1)^3$

θ) $-8x(x^3-1)(x^3+1)$

P) $-8x(x-1)^3(x+1)^3$

R) None of L), M), θ), and P).

(5-74T)

(180) Factoring: $-8x^7+8x =$

S) $-8x(x-1)^2(x^2+x+1)(x+1)^2(x^2-x+1)$

T) $-8x(x-1)(x^2+x+1)(x+1)(x^2-x+1)$

U) $-8x(x-1)^2(x^2+x+1)^2$

W) $-8x(x+1)^2(x^2-x+1)$

X) None of S), T), u), and W).

(5-74B)

(181) Using the long division at the right as help, it can be seen that x^3-7x+6 factors into

$$\begin{array}{r l}
 & x^2+2x-3 \\ \cline{2-2}
x-2 & \big) \, x^3+0x^2-7x+6 \\
 & \ominus x^3 \overset{\oplus}{-} 2x^2 \\ \cline{2-2}
 & \quad 2x^2-7x \\
 & \ominus \; 2x^2 \overset{\oplus}{-} 4x \\ \cline{2-2}
 & \qquad -3x+6 \\
 & \qquad \oplus -3x \overset{\ominus}{+} 6 \\ \cline{2-2}
\end{array}$$

A) $(x-2)(x-3)^2$

B) $(x-2)(x+3)(x-1)$

C) $(x-2)(x+2)(x-3)$

D) $(x-2)(x-3)(x+1)$

E) $(x-2)(x-3)(x-1)$

(5-75 T)

(182) $27x^3 - 125 =$

F) $(3x-5)(9x^2+15x+25)$

G) $(27x-5)(27x+5)$

H) $(3x-5)(9x^2-15x+25)$

J) $(3x-5)(9x^2+30x+25)$

K) None of F), G), H), and J).

(5-75 B)

(183) A rational expression is a fraction of ________

L) Integers

M) Polynomials

P) Rational numbers

Q) None of L), M), and P).

(5-75 B)

(184) which of the following is a rational expression

R. $\sqrt{x}+1$

S. $\dfrac{\sqrt{x}+1}{\sqrt{x}-1}$

T. $\dfrac{3x^2+\sqrt{x}+5}{x+2}$

U. $\dfrac{5}{\sqrt{x}+3}$

W. None of R), S), T), and U).

(5-76T)

(185) What is $\frac{x^2-4}{x^3-8}$ reduced to its lowest terms?

A) $\frac{x-2}{x^2-2x+4}$

B) $\frac{x-2}{x^2+2x+4}$

C) $\frac{x+2}{x^2-2x+4}$

D) $\frac{x+2}{x^2+2x+4}$

E) None of A), B), C), and D).

(5-76M)

(186) What is $\frac{x^2-9}{x^2-25} \cdot \frac{x^2-6x+5}{x^2-4x+3}$ reduced to lowest terms?

F) $\frac{x+3}{x-5}$

G) $\frac{x-3}{x+5}$

H) $\frac{x+3}{x+5}$

J) $\frac{x-3}{x-5}$

K) $\frac{x+3}{x-1}$

L) $\frac{x-3}{x-1}$

M) None of F), G), H), J), K), and L).

(5-76B)

(187) what is $\frac{x^2-3x+2}{x^2-4} \div \frac{5x^2-5}{x^2+3x+2}$ reduced to lowest terms?

N) 5

O) $\frac{1}{5}$

P) $\frac{x-1}{x+2}$

R) $\frac{x-1}{5(x+2)}$

S) None of N), O), P), and R).

(5-78T)

(188) what is $\text{lcm}(2^6\cdot5^{10}\cdot7^{20}, 3^8\cdot5^6\cdot7^4\cdot11^8)$?

T) $2^6\cdot3^8\cdot5^6\cdot7^4\cdot11^8$

U) $5^6\cdot7^4$

W) $2^6\cdot3^8\cdot5^{10}\cdot7^{20}\cdot11^8$

X) $2^6, 3^8, 5^6, 7^4, 11^8$

Z) None of T), U), W), and X).

(5-78M)

(189) $\text{lcm}(36,45) =$

A) $2^2\cdot3^2\cdot5^1$

B) $36\cdot45$

C) 3^2

D) $2^2+3^2+5^1$

E) $36, 45$

F) $2^2, 3^2, 5^1$

G) None of A), B), C), D), E), and F).

(5-78 M)

(190) $\mathrm{lcm}(x^5(x+1)^3, y(x+1)^4x^2) =$

H) $x^2(x+1)^3$

I) $x^2(x+1)^3y$

K) $x^2, (x+1)^3, y$

L) $x^5(x+1)^4y$

M) None of H), I), K), and L).

(5-78 B) which is a next correct derivation step?

(191) $\mathrm{lcm}(x^5+3x^4+3x^3+x^2, x^3-x+x^2-1) =$

$\mathrm{lcm}(x^2(x^3+3x^2+3x+1), x(x^2-1)+(x^2-1)\cdot 1) =$

N) $\mathrm{lcm}(x^2(x^3+1), (x^2-1)(x+1))$

O) $\mathrm{lcm}(x^2(x+1)^3, (x^2+1)(x-1))$

P) $\mathrm{lcm}(x^2(x+1)^3, (x^2-1)(x+1))$

R) $\mathrm{lcm}(x^2(x+3)^3, (x^2-1)(x+1))$

S) None of N), O), P) and R).

(5-78 B)

(192) $\mathrm{lcm}(x^5+3x^4+3x^3+x^2, x^3-x+x^2-1) =$

T) $x^2(x+1)^3(x-1)$

U) $x^2(x^3+1)(x-1)$

W) $x^2(x+3)^3(x-1)$

X) $x^2(x+1)(x-1)$

Z) None of T), U), W), and X).

(5-79 M)

(193) $\frac{3}{x^5y^2} + \frac{4}{x^3y^7} =$ (Not simplified)

A) $\frac{3+4}{x^8y^9}$

B) $\frac{3x^3y^7+4x^5y^2}{x^{15}y^{14}}$

C) $\frac{3x^3y^7+4x^5y^2}{x^8y^9}$

D) $\frac{3+4}{x^5y^2+x^3y^7}$

E) None of A), B), C), and D).

(5-79 B)

(194) $\frac{3}{x^5y^2} + \frac{4}{x^3y^7} =$ (Simplified)

F) $\frac{3+4}{x^5y^7}$

G) $\frac{3y^5+4x^2}{x^5y^7}$

H) $\frac{3y^2+4x^3}{x^3y^2}$

J) $\frac{3y^5+4x^2}{x^3y^2}$

K) None of F), G), H), and J).

(5-79B)

(195) The smallest common denominator for $\frac{3}{x^5y^2}+\frac{4}{x^3y^7}$ is

L) x^3y^2
M) x^8y^9
P) $x^{15}y^{14}$
Q) x^5y^7
R) None of L), M), P), and Q).

(5-79B)

(196) True or False: The smallest common denominator for $\frac{3}{x^5y^2}+\frac{4}{x^3y^7}$ is the least common multiple of the denominators.

T) True
F) False

(5-79M)

(197) $\frac{3x^3y^7+4x^5y^2}{x^8y^9} =$

S) $\frac{3\cancel{x^3}\cancel{y^7}+4x^5y^2}{\cancel{x^8}\cancel{y^9}} = \frac{3+4x^5y^2}{x^5y^2}$

T) $\frac{3y^5+4x^2}{x^5y^7}$

U) None of S) and T).

(5-80T)

⑱198 is circled: (198) $\frac{3z}{x^5y^2} - \frac{2m}{x^3y^6} + \frac{4}{x^4y^7} =$

A) $\frac{3zy^5 - 2mx^2y + 4x}{x^3y^2}$

B) $\frac{3zy^5 - 2mx^2y + 4x}{x^5y^7}$

C) $\frac{3z - 2m + 4}{x^5y^2 - x^3y^6 + x^4y^7}$

D) $\frac{3z - 2m + 4}{x^5y^7}$

E) None of A), B), and C).

(5-80T)

(199) $\frac{2m}{x^3y^6} =$

F) $\frac{2m\,x^2y}{x^3y^6\,x^2y}$

G) $\frac{2m}{x^3y^6\,x^2y}$

H) $\frac{2m\,x^2y}{x^3y^6}$

J) None of F), G), and H)

(5-80M)

(200) $\frac{x}{x^2+6x+9} - \frac{(x-3)}{x^2+5x+6} =$

K) $\frac{x-(x-3)}{(x+3)^2(x+2)(x+3)}$

L) $\frac{x-(x-3)}{(x+3)^2(x+2)}$

M) $\frac{x(x+2)-(x-3)(x+3)}{(x+3)^2(x+2)}$

O) None of K), L), and M).

(5-80M)

(201) $\frac{x}{x^2+6x+9} - \frac{(x-3)}{x^2+5x+6} =$

P) $\frac{2x-9}{(x+3)^2(x+2)}$

Q) $\frac{2x-9}{(x+3)(x+2)}$

R) $\frac{2x+9}{(x+3)^2(x+2)}$

S) $\frac{2x+9}{(x+3)(x+2)}$

T) None of P), Q), R), and S).

(5-80B)

202 $5 - \frac{4}{x} =$

V) $\frac{5-4}{x} = \frac{1}{x}$

W) $\frac{5x-4x}{x} = \frac{1x}{x} = 1$

X) $\frac{5x-4}{x}$

Z) None of V), W), and X).

(5-80B)

203 $3 + \frac{x}{2} =$

A) $\frac{3+x}{2}$

B) $\frac{3x+x}{2}$

C) $\frac{5+x}{2}$

D) None of A), B), and C).

(5-81T)

204 Which of the following is a complex fraction?

E) $\frac{(x+1)(x+2)2 + 3(x+2)8}{15(x+1)(x+2) - 3(x+1)2}$

F) $\frac{\frac{2}{3} + \frac{8}{x+1}}{5 - \frac{2}{x+2}}$

G) $\frac{\sqrt{x+1} - x^2 + 7\sqrt{x+2} - 5x^6(x+3)}{(x+1)^{2/3}\sqrt{7x+6} - 5\sqrt{x+2}}$

H) None of E), F), and G).

(5-81T)

(205) A way that was taught to change the complex fraction $\dfrac{\frac{2}{3}+\frac{8}{x+1}}{5-\frac{2}{x+2}}$ into a fraction that is not a complex fraction was to multiply the numerator and denominator of the main fraction by

J) $2+8+5-2$

K) $2 \cdot 8 \cdot 5 \cdot 2$

L) $3+(x+1)+(x+2)$

M) $3 \cdot (x+1)(x+2)$

θ) None of J), K), L), and M).

(5-81 T,M)

(206) When the quantity $3(x+1)(x+2)$ is distributed in $\dfrac{3(x+1)(x+2)\left[\frac{2}{3}+\frac{8}{x+1}\right]}{3(x+1)(x+2)\left[5-\frac{2}{x+2}\right]}$ and canceling is done, you get

P) $\dfrac{2+8}{5-2}$

Q) $\dfrac{2(x+1)+8(x+2)}{5(3)-2(x+1)}$

R) $\dfrac{(x+1)(x+2)2+3(x+2)8}{15(x+1)(x+2)-3(x+1)2}$

S) $\dfrac{3(x+1)(x+2)(2)(8)}{3(x+1)(x+2)\,5(-2)}$

T) None of P), Q), R), and S).

(5-81)

(207) $\dfrac{\frac{2}{3}+\frac{8}{x+1}}{5-\frac{2}{x+2}}$ simplifies to

A) $\dfrac{2(x+2)(x+13)}{3(x+1)(5x+8)}$

B) $\dfrac{2(x+1)(x+13)}{3(x+2)(5x+18)}$

C) $\dfrac{3(x+1)(5x+13)}{2(x+2)(x+13)}$

D) $\dfrac{8(x+2)(x+13)}{5(x+1)(5x+8)}$

E) None of these.

(5-82T)

(208) $\dfrac{\frac{2}{3}+\frac{8}{x+1}}{5-\frac{2}{x+2}} =$

F) $\dfrac{\frac{2+8}{3(x+1)}}{\frac{5-2}{x+2}}$

G) $\dfrac{2(x+1)+8(3)}{5(x+2)-2}$

H) $\dfrac{\frac{2(x+1)+24}{3(x+1)}}{\frac{5(x+2)-2}{x+2}}$

J) None of F), G), and H).

(5-82M)

(209) $$\frac{\frac{2x+26}{3(x+1)}}{\frac{5x+8}{x+2}} =$$

K) $\frac{2x+26}{3(x+1)} \cdot \frac{5x+8}{x+2}$

L) $\frac{5x+8}{x+2} \cdot \frac{3(x+1)}{2x+26}$

M) $\frac{2x+26}{3(x+1)} \cdot \frac{x+2}{5x+8}$

O) None of K), L), and M)

(5-82M)

(210) True or false: $\frac{\cancel{x^4}+y^5}{5\cancel{x^4}} = \frac{1+y^5}{5}$

T) True

F) False

(5-82B)

(211) True or false:

$$\frac{3\cancel{(x+1)}\cancel{(x+2)}+5(x-7)}{4\cancel{(x+1)}\cancel{(x+2)}} = \frac{3+5(x-7)}{4}$$

T) True

F) False

(5-82B) True or false : $\frac{\cancel{x^4}y^5}{5\cancel{x^4}} = \frac{y^5}{5}$

212 T) True

F) False

(5-83 T)

213 $$\frac{x^{-2}-y^{-2}}{x^{-1}+y^{-1}} \cdot \frac{3x}{y^{-1}-x^{-1}} =$$

P) $\frac{x+y}{x^2-y^2} \cdot \frac{3x}{\frac{1}{y}-\frac{1}{x}}$

Q) $\frac{\frac{1}{x^2}-\frac{1}{y^2}}{\frac{1}{x}+\frac{1}{y}} \cdot \frac{\frac{3}{x}}{\frac{1}{y}-\frac{1}{x}}$

R) $\frac{\frac{1}{x^2}-\frac{1}{y^2}}{\frac{1}{x}+\frac{1}{y}} \cdot \frac{3x}{\frac{1}{y}-\frac{1}{x}}$

S) $\frac{\frac{1}{x^{-2}}-\frac{1}{y^{-2}}}{\frac{1}{x^{-1}}-\frac{1}{y^{-1}}} \cdot \frac{\frac{3x}{1}}{\frac{1}{y^{-1}}-\frac{1}{x^{-1}}}$

T) None of P), Q), R), and S).

(5-83)

(214) $$\frac{\frac{1}{x^2}-\frac{1}{y^2}}{\frac{1}{x}+\frac{1}{y}} \cdot \frac{3x}{\frac{1}{y}-\frac{1}{x}} =$$

A) $$\frac{\frac{y^2-x^2}{x^2-y^2}}{\frac{y+x}{x+y}} \cdot \frac{\frac{3x}{1}}{\frac{x-y}{y-x}}$$

B) $$\frac{\frac{y^2-x^2}{x^2y^2}}{\frac{y+x}{xy}} \cdot \frac{\frac{3x}{1}}{\frac{x-y}{xy}}$$

C) $$\frac{y^2-x^2}{y+x} \cdot \frac{x-y}{3x}$$

D) $$\frac{\frac{x^2-y^2}{x^2y^2}}{\frac{y+x}{xy}} \cdot \frac{\frac{1}{3x}}{\frac{x-y}{3x}}$$

E) None of A), B), C), and D).

(5-83)

215 $$\frac{\frac{y^2-x^2}{x^2y^2}}{\frac{y+x}{xy}} \cdot \frac{\frac{3x}{1}}{\frac{x-y}{xy}} =$$

F) $\frac{y^2-x^2}{x^2y^2} \cdot \frac{xy}{y+x} \cdot \frac{3x}{1} \cdot \frac{xy}{x-y}$

G) $\frac{y^2-x^2}{x^2y^2} \cdot \frac{y+x}{xy} \cdot \frac{3x}{1} \cdot \frac{x-y}{xy}$

H) $\frac{y^2-x^2}{x^2y^2} \cdot \frac{xy}{y+x} \cdot \frac{1}{3x} \cdot \frac{xy}{x-y}$

J) $\frac{x^2y^2}{y^2-x^2} \cdot \frac{y+x}{xy} \cdot \frac{1}{3x} \cdot \frac{x-y}{xy}$

K) None of F), G), H), and J).

(5-83M)

216 $\frac{xy}{x-y} =$

L) $\frac{xy}{-(x+y)}$

M) $\frac{xy}{-(x-y)}$

P) $\frac{xy}{-(y-x)}$

Q) None of L), M), and P).

(5-83 M,B)

(217) $\frac{y^2-x^2}{x-y} =$

R) $y-x$

S) $y+x$

T) $-(y-x)$

U) None of R), S), and T).

(6-86 M) COMPLEX NUMBERS: $i =$

(218)

A) -1

B) $-i$

C) $\sqrt{-1}$

D) $(\sqrt{-1})^2$

E) None of A), B), C), and D).

(6-86 M)

(219) $i^2 =$ (COMPLEX NUMBERS)

A) -1

B) $-i$

C) $\sqrt{-1}$

D) 1

E) None of A), B), C), and D).

(6-86M) COMPLEX NUMBERS

(220) $i^{12} =$

F) i
G) $-i$
H) 1
J) -1
K) None of F), G), H), and J)

(6-86M) COMPLEX NUMBERS

(221) $i^{15} =$

L) i
M) $-i$
θ) 1
P) -1
R) None of L), M), θ), and P).

(6-86M) COMPLEX NUMBERS

(222) $i^{97} =$

S) i
T) $-i$
U) 1
W) -1
X) None of S), T), U), and W).

(6-87T) COMPLEX NUMBERS

(223) WHAT IS THE IMAGINARY PART OF $5-\frac{1}{2}i$?

A) $-\frac{1}{2}$

B) $-\frac{1}{2}i$

C) $\frac{1}{2}$

D) $\frac{1}{2}i$

E) None of A), B), C), and D).

(6-87T) COMPLEX NUMBERS

(224) WHAT IS THE REAL PART OF $3+4i$?

F) 3

G) 4

H) $4i$

J) $4(-1)$

K) None of F), G), H), and J).

(6-87M) COMPLEX NUMBERS

(225) AN IMAGINARY NUMBER IS A COMPLEX NUMBER

L) WHOSE REAL PART IS NEGATIVE

M) WHOSE IMAGINARY PART IS ALWAYS NEGATIVE.

P) THAT IS NOT REAL.

Q) None of L), M), and P).

(6-87 B) COMPLEX NUMBERS

(226) A PURE IMAGINARY NUMBER IS A COMPLEX NUMBER

R) WHERE IMAGINARY PART IS NOT A FRACTION
S) WHERE THE IMAGINARY PART IS NOT IRRATIONAL.
T) WHERE THE REAL PART IS ZERO AND THE IMAGINARY PART IS NOT ZERO.
U) None of R), S), and T).

(6-87 M) COMPLEX NUMBERS

(227) TRUE OR FALSE: Every real number is complex.

T) TRUE
F) FALSE

(6-87 B) COMPLEX NUMBERS

(228) TRUE OR FALSE: $i\sqrt{3} = \sqrt{3i}$

T) TRUE
F) FALSE

(6-88 M) COMPLEX NUMBERS

(229) $(4+3i)+(2-\frac{1}{3}i) =$

A) $7i + (2-\frac{1}{3})i$
B) $6 + \frac{8}{3}i$
C) $6 - 8/3\,i$
D) None of A), B), and C).

(6-88 B) COMPLEX NUMBERS

(230) $\left(\frac{4}{3} - \frac{5}{6}i\right) - \left(\frac{1}{4} - \frac{2}{3}i\right) =$

E) $\frac{3}{2} - \frac{7}{3}i$

F) $\frac{13}{2} - \frac{1}{6}i$

G) $\frac{13}{2} + \frac{1}{6}i$

H) $-\frac{3}{2} + \frac{7}{3}i$

J) None of E), F), G), and H).

(6-89 T) COMPLEX NUMBERS

(231) $(3+2i)(5-3i) =$

K) $15 - 6(-1)$

L) $15 - 3(-1) + 10(-1) - 6(-1)$

M) $15 - 9i + 10i - 6(-1)$

P) None of K), L), and M).

(6-89 T) COMPLEX NUMBERS

(232) $\overline{3+2i} =$

Q) $3 - 2(-1)$

R) $3 - 2i$

S) $3 + 2i$

T) None of Q), R), and S).

(6-89M) COMPLEX NUMBERS

233 $\overline{5} =$

U) 5
W) -5
Z) None of U) and W

(6-89B) COMPLEX NUMBERS

234 $\overline{-3i} =$

A) $-3i$
B) $3i$
C) None of A) and B).

(6-89B) COMPLEX NUMBERS

235 $\overline{\overline{z}} =$

D) z
E) $-z$
F) $z+i$
G) $z-i$
H) None of D), E), F), and G).

(6-89 B) COMPLEX NUMBERS

(236) Let $z = 3+2i$ and $w = 4+5i$.

$\overline{z+\overline{z+w}} =$

J) $7-3i$

K) $10+3i$

L) $10-5i$

M) $10+5i$

N) None of J), K), L), and M).

(6-91 T) COMPLEX NUMBERS

(237) True or false: $\frac{2+3i}{5+4i} = \frac{2}{5} + \frac{3i}{4i}$

T) True

F) False

(6-91M) COMPLEX NUMBERS

(238) $\frac{4+3i}{2+5i} =$

O) $2+\frac{3}{5}i$

P) $\frac{7i}{7i}$

R) $\frac{23}{29}+\left(\frac{-14}{29}\right)i$

S) $\frac{23}{29}+\frac{14}{29}i$

T) $\frac{23}{29}+\frac{-26}{29}i$

U) $\frac{23}{29}+\frac{26}{29}i$

W) None of O), P), R), S), T), and U)

(6-91B) COMPLEX NUMBERS

(239) $\frac{7-3i}{4i} =$

A) $\frac{7}{4} - \frac{3}{4}i$

B) $\frac{7}{4} + \frac{3}{4}i$

C) $\frac{-3}{4} + \frac{7}{4}i$

D) $-\frac{3}{4} - \frac{7}{4}i$

E) None of A), B), C), and D).

(6-92) COMPLEX NUMBERS

(240) Which derivation sequence is totally correct?

$$\frac{\sqrt{3} - i\sqrt{2}}{\sqrt{5} + i\sqrt{3}} =$$

F) $\frac{\sqrt{3} - i\sqrt{2}}{\sqrt{5} + i\sqrt{3}} \cdot \frac{\sqrt{5} + i\sqrt{3}}{\sqrt{5} + i\sqrt{3}} = \frac{\sqrt{15} - 3i - i\sqrt{10} + i^2\sqrt{6}}{5 - i3}$

G) $\frac{\sqrt{3} - i\sqrt{2}}{\sqrt{5} + i\sqrt{3}} \cdot \frac{\sqrt{5} + i\sqrt{3}}{\sqrt{5} + i\sqrt{3}} = \frac{\sqrt{15} - 3i - i\sqrt{10} + i^2\sqrt{6}}{5 - i^2 3}$

H) $\frac{\sqrt{3} - i\sqrt{2}}{\sqrt{5} + i\sqrt{3}} \cdot \frac{\sqrt{5} - i\sqrt{3}}{\sqrt{5} - i\sqrt{3}} = \frac{\sqrt{15} - 3i - i\sqrt{10} + i^2\sqrt{6}}{5 - 3i^2}$

J) $\frac{\sqrt{3} - i\sqrt{2}}{\sqrt{5} + i\sqrt{3}} \cdot \frac{\sqrt{5} - i\sqrt{3}}{\sqrt{5} - i\sqrt{3}} = \frac{\sqrt{15} - 3i - i\sqrt{10} + i^2\sqrt{6}}{(\sqrt{5} - i\sqrt{3})^2}$

K) None of F), G), H), and J).

(6-92 M) COMPLEX NUMBERS

(241) $$\frac{\sqrt{15} - 3i - i\sqrt{10} + i^2\sqrt{6}}{5 - 3i^2} =$$

L) $$\frac{\sqrt{15} - (3 - i\sqrt{10}) + (-1)\sqrt{6}}{5 - 3(-1)}$$

M) $$\frac{\sqrt{15} + (-3 - \sqrt{10})i + (-1)\sqrt{6}}{5 - 3(-1)}$$

P) $$\frac{\sqrt{15} + (-3 - \sqrt{10})i - (-1)\sqrt{6}}{5 - 3(-1)}$$

Q) $$\frac{\sqrt{15} - (-3 - \sqrt{10})i + (-1)\sqrt{6}}{5 - 3(-1)}$$

R) None of L), M), P), and Q).

(6-92) COMPLEX NUMBERS

(242) $$\frac{\sqrt{3} - i\sqrt{2}}{\sqrt{5} + i\sqrt{3}} =$$

S) $$\frac{\sqrt{15} - \sqrt{6}}{8} + \frac{(-3 - \sqrt{10})}{8}i$$

T) $$\frac{\sqrt{15} + \sqrt{6}}{8} + \frac{(3 - \sqrt{10})}{8}i$$

U) $$\frac{\sqrt{15} + \sqrt{6}}{8} + \frac{(-3 - \sqrt{10})}{8}i$$

W) $$-\frac{\sqrt{15} + \sqrt{6}}{8} + \frac{(-3 - \sqrt{10})}{8}i$$

X) None of S), T), U), and W).

(6-93T) COMPLEX NUMBERS

(243) $\sqrt{-9} =$

A) -3
B) $3i$
C) $-3i$
D) None of A), B), and C).

(6-93T) COMPLEX NUMBERS

(244) $\sqrt{-7} =$

E) $-\sqrt{7}$
F) $-7i$
G) $7i$
H) None of E), F), and G).

(6-93M) COMPLEX NUMBERS

(245) True or false: For all real numbers a, b, $\sqrt{ab} = \sqrt{a}\sqrt{b}$

T) True
F) False

(6-93B) COMPLEX NUMBERS

(246) $\sqrt{-8}\left(\sqrt{8} - \sqrt{-2}\right) =$

J) $-4+8i$
K) $4+8i$
L) $4-8i$
M) $-4-8i$
P) None of J), K), L), and M).

(6-93B) COMPLEX NUMBERS

(247) which derivation is correct?

$(\sqrt{3} - \sqrt{-2})(\sqrt{3} + \sqrt{-5}) =$

Q) $\sqrt{9} + \sqrt{-15} - \sqrt{-6} - \sqrt{10}$
R) $\sqrt{9} + \sqrt{-15} + \sqrt{6} + \sqrt{10}$
S) $(\sqrt{3} - i\sqrt{2})(\sqrt{3} + i\sqrt{5}) = 3 + i\sqrt{15} - i\sqrt{6} - i^2\sqrt{10}$
T) $(\sqrt{3} - i\sqrt{2})(\sqrt{3} + i\sqrt{5}) = 3 + i\sqrt{15} + i\sqrt{6} + i^2\sqrt{10}$
U) None of Q), R), S), and T).

(6-93 B) COMPLEX NUMBERS

(248) $(\sqrt{3} - i\sqrt{-2})(\sqrt{3} + \sqrt{-5}) =$

A) $(3 + \sqrt{10}) + (\sqrt{15} - \sqrt{6})i$
B) $(3 - \sqrt{10}) + (\sqrt{15} - \sqrt{6})i$
c) $(3 - \sqrt{10}) + \sqrt{11}\, i$
D) $(3 + \sqrt{10}) + \sqrt{11}\, i$
E) None of A), B), c), and D).

(6-95T)

(249) which of the following is an <u>equation</u>?

F) $2x - 3$
G) $2x - 3 = 0$
H) None of F) and G).

(6-95 B)

(250) Name the solution set for $x+4=7$

J) 3
K) $\{3\}$
L) $\{\ \}$
M) None of J), K), and L).

(6-95B)

(251) Name the solution set for $x^2=4$.

N) ± 2
O) $\{2\}$
P) $\{-2, 2\}$
R) $\{\ \}$
S) None of N), O), P), and R.

(6-95B)

(252) To SOLVE an equation it means

T) Find a value for x that works.
U) Find a solution set
W) None of T), U), and W).

(7-96 T)

(253) An identity is an equation that

A) is true for all values for which both sides of the equation are defined.
B) has no solution.
C) is true for at least one, but not all values for which both sides of the equation are defined.
D) None of A), B), and C)

(7-96 M)

(254) An inconsistent equation

E) is true for all values for which both sides of the equation are defined.

F) has no solution

G) is true for at least one, but not all values for which both sides of the equation are defined.

H) None of E), F), and G).

(7-96 B)

(255) A conditional equation

J) is true for all values for which both sides of the equation are defined.

K) has no solution.

L) is true for at least one, but not all values for which both sides of the equation are defined

M) None of J), K), and L).

(7-96 B)

(256) At times what word is used to mean the the same thing as solution?

N) Root

O) Derivation

P) Identity

R) None of N), O), and P).

(7-97T)

(257) Equivalent equations have the same

S) Look
T) structure
U) Solution set
W) None of S), T), and U).

(7-97M)

(258) Which equation is equivalent to $2x+1=7$?

A) $2x+1=3$
B) $2x+1-1=7-1$
C) $x=2$
D) $(2x+1)\cdot 0=7\cdot 0$
E) None of A), B), C), and D).

(7-97B)

(259) Which equation is equivalent to $x^2-6x=x-12$?

F) $x^2-5x-12=0$
G) $x^2-7x+12=0$
H) $x^2-7x-12=0$
J) $x^2+5x-12=0$

(7-98B)

(260) which equation is equivalent to $5x-3=2x+7$?

K) $5x-3+7=2x$

L) $5x+2x=-3+7$

M) $-2x+5x-3=7$

θ) $-3=5x+2x+7$

P) None of K), L), M), and θ).

(7-98B)

(261) what is the solution set for $5x-3=2x+7$?

Q) $\{\frac{4}{3}\}$

R) $\{-\frac{4}{3}\}$

S) $\{\frac{10}{3}\}$

T) $\{-\frac{10}{3}\}$

U) None of Q), R), S), and T).

(7-99T)

(262) what is equivalent to
$5(2x-1)(x+4)=(10x-1)(x+3)$

A) $5(2x^2+8x-4)=10x^2+30x-3$

B) $5(2x^2+8x-x-4)=10x^2+30x-x-3$

C) $(10x-5)(5x+20)=(10x-1)(x+3)$

D) None of A), B), and C).

(7-99T)

(263) The solution set for
$5(2x-1)(x+4) = (10x-1)(x+3)$ is

E) $\left\{\frac{17}{6}\right\}$

F) $\left\{-\frac{17}{6}\right\}$

G) $\left\{\frac{23}{6}\right\}$

H) $\left\{-\frac{23}{6}\right\}$

J) None of E), F), G), and H).

(7-99T)

(264) The solution set for
$5(2x^2+7x-4) = 10x^2+29x-3$ is

K) $\left\{\frac{17}{64}\right\}$

L) $\left\{-\frac{17}{64}\right\}$

M) $\left\{-\frac{23}{6}\right\}$

P) $\left\{-\frac{17}{6}\right\}$

Q) None of K), L), M), and P).

(7-99B)

(265) The solution set for
$3b-2x+7 = 5x-bx$ is (x is the unknow, not b)

$b \neq 7$

R) $\left\{\frac{3b-7}{7-b}\right\}$

S) $\left\{\frac{3b+7}{7-b}\right\}$

T) $\left\{\frac{7+b}{3b-7}\right\}$

U) $\left\{\frac{7-b}{3b-7}\right\}$

W) None of R), S), T), and U).

(7-99B)

(266) What equation is equivalent to
$3b - 2x + 7 = 5x - bx$?

A) $7x + bx = -3b - 7$
B) $-7x + bx = -3b - 7$
C) $-7x + bx = -3b + 7$
D) $-7x + bx = 3b - 7$
E) None of A), B), C), and D).

(7-101T)

(267) When multiplying or dividing an equation by an expression that could be zero, you need to remember to

F) square both sides
G) put ± in front of the answer
H) check your answer
J) subtract x from both sides
K) None of F), G), H), and J).

(7-101)

(268) The solution set for
$\frac{x}{x-4} + 2 = \frac{4}{x-4}$ is

L) $\{4\}$
M) $\{\ \}$
P) $\{0\}$
Q) $\{-2\}$
R) None of L), M), P), and Q).

(269) An equation equivalent to

$$(x-4)\left[\frac{x}{x-4}+2\right]=(x-4)\frac{4}{x-4}$$ is

S) $\frac{(x-4)x}{x-4}+2=4$

T) $\frac{(x-4)x}{x-4}+(x-4)2=4$

U) $\frac{(x-4)x}{x-4}+(x-4)2=(x-4)4$

W) $x+2=4$

X) None of S), T), U), and W).

(7-101 B)

(270) When in the process of solving an equation, you multiply both sides by an expression that could be 0, you then check your supposed answer. If the supposed answer does not work, then the supposed answer is

A) an identity
B) a conditional
C) an extraneous solution
D) a conjugate
E) None of A), B), C), and D).

(7-101T)

271 In solving $\frac{x}{x-4}+2=\frac{4}{x-4}$, you can multiply both sides by x-4 and then eventually get $x=4$. Remembering to check your answer, you substitute 4 in for x in the left side of the equation to get

F) $\frac{4}{4-4}+2 = \frac{4}{0}+2 = 0+2=2$

G) $\frac{4}{4-4}+2$ which is undefined

H) $\frac{4}{4-4}+2 = 1+2=3$

J) None of F), G), and H).

(7-102T)

272 The equation $\frac{y}{y+3}+4=\frac{5}{y+3}$ is equivalent to

K) $y+4=5$

L) $y+4y+4=5$

M) $y+4y+12=5$

θ) $y+4y+4=5y+15$

(7-102M)

②⑦③ Starting with $\frac{(y+3)y}{y+3} + (y+3)4 = 5$ and isolating y gives $y =$

P) $\frac{25}{8}$

Q) $7/5$

R) $-7/5$

S) $-25/8$

T) None of P), Q), R), and S).

(7-102)

②⑦④ In solving $\frac{y}{y+3} + 4 = \frac{5}{y+3}$, you can multiply both sides by y+3 and then eventually get $y = \frac{-7}{5}$. Remembering to check your answer, you substitute $\frac{-7}{5}$ in for y in the left side of the original equation and get a value of

A) $\frac{-7}{8}$

B) $\frac{7}{8}$

C) $\frac{39}{8}$

D) $-\frac{39}{8}$

E) $\frac{25}{8}$

F) $-\frac{25}{8}$

G) None of these

(7-102)

(275) The solution set for $\frac{y}{y+3} + 4 = \frac{5}{y+3}$ is

H) $\{\frac{-7}{5}\}$

J) $\{\frac{7}{5}\}$

K) $\{\frac{25}{8}\}$

L) $\{\frac{-25}{8}\}$

M) $\{\ \}$

Θ) None of H), J), K), L), and M).

(7-105 T)

(276) The solution set for $|x| = 3$ is

P) 3

Q) $\{3\}$

R) $\{-3, 3\}$

S) ± 3

T) None of P), Q), R), and S).

(7-105 M)

(277) The solution set for $x^2 = 8$ is

U) $\{2\sqrt{2}\}$

W) $\{-2\sqrt{2}, 2\sqrt{2}\}$

X) $\sqrt{8}$

Z) None of U), W), and X)

7-105 B

(278) The solution set for $(x-3)^2 = 5$ is

A) $\{3+5, 3-5\}$
B) $\{3+5\}$
C) $\{3+\sqrt{5}, 3-\sqrt{5}\}$
D) $\{3+\sqrt{5}\}$
E) None of A), B), C), and D).

(7-105 B)

(279) $\sqrt{(x-3)^2} =$

F) $x-3$
G) $|x-3|$
H) $\sqrt{|x-3|}$
J) None of F), G), and H).

(7-106 T)

(280) The solution set for $(x+2)^2 = 16$ is

K) $\{2, -6\}$
L) $\{-2, 6\}$
M) $\{2\}$
P) $\{-6\}$
R) None of K), L), M), and P).

(7-106 M)

(281) The solution set for $(x+\frac{1}{2})^2=-27$ is

S) $\{\frac{1}{2}+3i\sqrt{3}, \frac{1}{2}-3i\sqrt{3}\}$
T) $\{-\frac{1}{2}-27, -\frac{1}{2}+27\}$
U) $\{-\frac{1}{2}+3i\sqrt{3}, -\frac{1}{2}-3i\sqrt{3}\}$
W) $\{-\frac{1}{2}-27i, -\frac{1}{2}+27i\}$
X) None of S), T), U), and W).

(7-106 M)

(282) If you know $(x+\frac{1}{2})^2=-27$, then which of the following must be true?

A) $x+\frac{1}{2}=-27$
B) $x+\frac{1}{2}=\pm 27$
C) $x+\frac{1}{2}=\sqrt{-27}$
D) $x+\frac{1}{2}=\pm\sqrt{-27}$
E) None of A), B), C), and D).

(7-106 B)

(283) If $(x-2)(x-3)=0$, then which of the following must be true?

F) $x-2=0$
G) $x-2=0$ OR $x-3=0$
H) $x-2=0$ AND $x-3=0$
J) $x-3=0$
K) None of F), G), H), and J).

(284) Solve $8x^2-2x-15=0$. The solution set is

L) $\{8,-15\}$
M) $\{-\frac{3}{2},\frac{5}{4}\}$
O) $\{-\frac{5}{4},\frac{3}{2}\}$
P) $\{-\frac{2}{3},\frac{4}{5}\}$
R) $\{\frac{2}{3},-\frac{4}{5}\}$
S) None of L), M), O), P), and R).

(7-107M)

(285) x^2+x+1 can be factored into $\left(x-\left[\frac{-1+i\sqrt{3}}{2}\right]\right)\left(x-\left[\frac{-1-i\sqrt{3}}{2}\right]\right)$. So the solution set for $x^2+x+1=0$ is

T) $\left\{-\left[\frac{-1+i\sqrt{3}}{2}\right], -\left[\frac{-1-i\sqrt{3}}{2}\right]\right\}$
U) $\left\{\frac{-1+i\sqrt{3}}{2}, \frac{-1-i\sqrt{3}}{2}\right\}$
W) $\left\{\frac{i\sqrt{3}}{2}, -\frac{i\sqrt{3}}{2}\right\}$
X) $\{+1,-1\}$
Z) None of T), U), W), and X).

(7-107T)

(286) When you know $(2x-3)(4x+5)=0$, which of the following is true?

A) $2x-3=0$ OR $4x+5=0$.

B) $2x-3=0$ AND $4x+5=0$.

(7-108T)

(287) $x^2+6x+9 =$

C) $(x+9)^2$

D) $(x+6)^2$

E) $(x+3)^2$

F) None of C), D), and E).

(7-108T)

(288) $x^2-8x+16 =$

G) $(x+8)^2$

H) $(x-8)^2$

J) $(x-4)^2$

K) $(x+4)^2$

L) None of G), H), J), and K).

(7-108M)

(289) $x^2-\frac{2}{3}x+\frac{1}{9} =$

M) $(x-\frac{2}{3})^2$

P) $(x+2/3)^2$

Q) $(x-1/9)^2$

R) None of M), P), and Q).

(7-108 B)

290 What do you fill in the blank with to make x^2+10x+_____ a perfect square?

S) 5
T) 25
U) -5
W) -25
X) None of S), T), U), and W).

(7-108 B)

291 What do you fill in the blank with to make $x^2-\frac{5}{3}x+$_____ a perfect square?

A) $\frac{25}{36}$
B) $-\frac{25}{36}$
C) $5/6$
D) $-5/6$
E) None of A), B), C), and D).

(7-109 T)

292 As taught, the 1st step to solve $2x^2+12x+4=0$ by the complete the square process is to have the line

F) $x^2+12x+4=0$
G) $x^2+6x+4=0$
H) $x^2+6x+2=0$
J) None of F), G), and H).

(7-109)

(293) The first steps, as taught, to solve $2x^2+12x+4=0$ by the complete the square process are.

$$x^2+6x+2=0$$
$$x^2+6x \quad =-2$$

What is the next line, as taught?

K) $x^2+6x+3=-2+3$

L) $x^2+6x+9=-2$

M) $x^2+6x+9=-2+9$

P) $x^2+6x \quad =-2+9$

Q) None of K), L), M), and P).

(7-109)

(294) Solving $2x^2+12x+4=0$ by the complete the square process proceeds

$$x^2+6x+2=0$$
$$x^2+6x \quad =-2$$
$$x^2+6x+9=-2+9$$

What is the next step as taught?

R) $(x+3)^2=7$

S) $(x+6)^2=7$

T) $(x+9)^2=7$

U) $(x+3)^2=9$

W) None of R), S), T), and U).

(7-109, 110T)

(295) In solving $2x^2+12x+4=0$ by the complete the square process, the step $(x+3)^2=7$ is derived. What is the solution set?

A) $\{-\sqrt{7}, \sqrt{7}\}$
B) $\{3+\sqrt{7}, 3-\sqrt{7}\}$
C) $\{-3+\sqrt{7}, -3-\sqrt{7}\}$
D) $\{-3+7, -3-7\}$
E) None of A), B), C), and D).

(7-110M)

(296) As taught, the 1st step to solve $-3x^2+9x-5=0$ by the complete the square process is to have the line

F) $x^2+9x-5=0$
G) $x^2+3x-5=0$
H) $x^2-3x-5=0$
J) $x^2-3x-5/3=0$
K) $x^2+3x-5/3=0$
L) $x^2-3x+5/3=0$
M) None of F), G), H), J), K), and L)

(7-110 M)

(297) The first steps, as taught, to solve $-3x^2+9x-5=0$ by the complete the square process are:

$$x^2-3x+\frac{5}{3}=0$$
$$x^2-3x=-\frac{5}{3}.$$

What is the next line, as taught?

N) $x^2-3x+\frac{9}{4}=-\frac{5}{3}+\frac{9}{4}$

P) $x^2-3x-\frac{9}{4}=-\frac{5}{3}-\frac{9}{4}$

Q) $x^2-3x+\frac{3}{2}=-\frac{5}{3}+\frac{3}{2}$

R) $x^2-3x-\frac{3}{2}=-\frac{5}{3}-\frac{3}{2}$

S) None of N), P), Q), and R).

(7-110 B)

(298) In solving $-3x^2+9x-5=0$ by the complete the square process, the step $(x-\frac{3}{2})^2=\frac{7}{12}$ is derived. What is the solution set?

A) $\{\frac{3}{2}+\frac{7}{12}, \frac{3}{2}-\frac{7}{12}\}$

B) $\{-\frac{3}{2}+\frac{7}{12}, -\frac{3}{2}-\frac{7}{12}\}$

C) $\{\frac{3}{2}+\frac{1}{2}\sqrt{\frac{7}{3}}, \frac{3}{2}-\frac{1}{2}\sqrt{\frac{7}{3}}\}$

D) $\{-\frac{3}{2}+\frac{1}{2}\sqrt{\frac{7}{3}}, -\frac{3}{2}-\frac{1}{2}\sqrt{\frac{7}{3}}\}$

E) None of A), B), C), and D).

(7-111T)

(299) The first steps, as taught, to solve $x^2+x+1=0$ by the complete the square process are:

$$x^2+x+1=0$$
$$x^2+x \quad = -1 .$$

What is the next line, as taught?

F) $x^2+x+\frac{1}{2} = -1+\frac{1}{2}$
G) $x^2+x-\frac{1}{2} = -1-\frac{1}{2}$
H) $x^2+x-1 = -1-1$
J) $x^2+x+\frac{1}{4} = -1$
K) None of F), G), H), and J).

(7-111)

(300) In solving $x^2+x+1=0$ by the complete the square process, the step $(x+\frac{1}{2})^2 = -\frac{3}{4}$ is derived. What is the solution set?

L) $\{\frac{1}{2}-\frac{3}{4}, \frac{1}{2}+\frac{3}{4}\}$
M) $\{-\frac{1}{2}-\frac{3}{4}, -\frac{1}{2}+\frac{3}{4}\}$
P) $\{\frac{1}{2}-\sqrt{\frac{3}{4}}, \frac{1}{2}+\sqrt{\frac{3}{4}}\}$
Q) $\{-\frac{1}{2}-\sqrt{\frac{3}{4}}, -\frac{1}{2}-\sqrt{\frac{3}{4}}\}$
R) $\{\frac{-1+i\sqrt{3}}{2}, \frac{-1-i\sqrt{3}}{2}\}$
S) $\{\frac{1+i\sqrt{3}}{2}, \frac{1-i\sqrt{3}}{2}\}$
T) None of L), M), P), Q), R), and S).

(7-111 M,B)

301 The solution set for $x^2+x+1=0$ is $\left\{\frac{-1+i\sqrt{3}}{2}, \frac{-1-i\sqrt{3}}{2}\right\}$, so x^2+x+1 factors into

U) $\left(x+\left[\frac{-1+i\sqrt{3}}{2}\right]\right)\left(x+\left[\frac{-1-i\sqrt{3}}{2}\right]\right)$

W) $\left(x-\left[\frac{-1+i\sqrt{3}}{2}\right]\right)\left(x-\left[\frac{-1-i\sqrt{3}}{2}\right]\right)$

X) $\left(2x-\left[-1+i\sqrt{3}\right]\right)\left(2x-\left[-1-i\sqrt{3}\right]\right)$

Z) None of U), W), and X).

(7-112)

302 The solution set for $-3x^2+9x-5=0$ is $\left\{\frac{3}{2}+\frac{1}{2}\sqrt{\frac{7}{3}}, \frac{3}{2}-\frac{1}{2}\sqrt{\frac{7}{3}}\right\}$, so $-3x^2+9x-5$ factors into

A) $\left(x+\left[\frac{3}{2}+\frac{1}{2}\sqrt{\frac{7}{3}}\right]\right)\left(x+\left[\frac{3}{2}-\frac{1}{2}\sqrt{\frac{7}{3}}\right]\right)$

B) $\left(x-\left[\frac{3}{2}+\frac{1}{2}\sqrt{\frac{7}{3}}\right]\right)\left(x-\left[\frac{3}{2}-\frac{1}{2}\sqrt{\frac{7}{3}}\right]\right)$

C) $-3\left(x+\left[\frac{3}{2}+\frac{1}{2}\sqrt{\frac{7}{3}}\right]\right)\left(x+\left[\frac{3}{2}-\frac{1}{2}\sqrt{\frac{7}{3}}\right]\right)$

D) $-3\left(x-\left[\frac{3}{2}+\frac{1}{2}\sqrt{\frac{7}{3}}\right]\right)\left(x-\left[\frac{3}{2}-\frac{1}{2}\sqrt{\frac{7}{3}}\right]\right)$

E) None of A), B), C), and D).

(7-114T)

③⓪③ The quadratic formula for solving $ax^2+bx+c=0$ is

F) $x = \frac{-b \pm \sqrt{b^2+4ac}}{2a}$

G) $x = \frac{b \pm \sqrt{b^2-4ac}}{2a}$

H) $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$

J) b^2-4ac

K) None of F), G), H), and J).

(7-115T)

(304) Solving $-3x^2+9x-5=0$ by the quadratic formula gives the solution set

L) $\left\{\frac{-9+\sqrt{21}}{-6}, \frac{-9-\sqrt{21}}{-6}\right\}$

M) $\left\{\frac{-9+\sqrt{21}}{6}, \frac{-9-\sqrt{21}}{6}\right\}$

P) $\left\{\frac{9+\sqrt{21}}{-6}, \frac{9-\sqrt{21}}{-6}\right\}$

Q) $\left\{9^2-4(-3)(-5)\right\}$

R) None of L), M), P), and Q).

(7-115 B)

(305) By continuing in $\frac{3}{2}+\frac{1}{2}\sqrt{\frac{7}{3}} = \frac{3}{2}+\frac{1}{2}\sqrt{\frac{7}{3}\cdot\frac{3}{3}} = \dots$, $\frac{3}{2}+\frac{1}{2}\sqrt{\frac{7}{3}}$ can be changed into the form

S) $\frac{-9+\sqrt{21}}{-6}$

T) $\frac{-9-\sqrt{21}}{-6}$

U) $\frac{9+\sqrt{21}}{-6}$

W) $\frac{9-\sqrt{21}}{-6}$

X) None of S), T), U), W)

(7-115 B)

(306) 3 methods studied for solving quadratic equations were

A) factor, check your answer, extraneous

B) extraneous, complete the square, quadratic formula.

C) complete the square, common denominate, quadratic formula.

D) factor, complete the square, common denominate

E) factor, complete the square, quadratic formula.

F) None of A), B), C), D), and E).

(7-116 T)

(307) Solving $x^2 - 6x + 9 = 0$ by the quadratic formula gives

G) $x = 3$
H) $x = \pm 3$
J) $x = 6$
K) $x = \pm 6$
L) None of G), H), J), and K).

(7-116 B)

(308) Solving $x^2 + x + 1 = 0$ by the quadratic formula gives

M) $x = \dfrac{-1 \pm \sqrt{1}}{2}$
P) $x = \dfrac{-1 \pm \sqrt{3}}{2}$
Q) $x = \dfrac{1 \pm i\sqrt{3}}{2}$
R) $x = \dfrac{-1 \pm i\sqrt{3}}{2}$
S) None of M), P), Q), and R).

(7-117T)

(309) The discriminant involved with $ax^2 + bx + c = 0$ is

T) $b^2 + 4ac$
U) $b^2 - 4ac$
W) $-b \pm 4ac$
X) $b^2 + 2a$
Z) None of T), U), W), and X).

(7-117 T)

(310) For $ax^2+bx+c=0$, when the discriminant is positive, there are

A) 2 real solutions
B) one real solution of multiplicity two
C) 2 imaginary solutions.
D) None of A), B), and C).

(7-117 T)

(311) For $ax^2+bx+c=0$, when the discriminant is zero,

E) there are 2 real solutions.
F) there is only one real solution of multiplicity two
G) there are 2 imaginary solution
H) None of E), F), and G).

(7-117 M)

(312) For $ax^2+bx+c=0$, when the discriminant is negative, there are

J) 2 real solutions
K) only one real solution of multiplicity two
L) 2 imaginary solutions
M) None of J), K), and L).

(7-117 B)

(313) What is the discriminant for $-3x^2+9x-5=0$?

N) 141
P) -21
Q) $+21$
R) 15
S) None of N), P), Q), and R).

(7-119 T) COMPLEX NUMBERS ALLOWED IN THE SOLUTION

(314) Solving by factoring $x^3+4x^2+2x+8=0$ gives

T) $\{-4, i\sqrt{2}, -i\sqrt{2}\}$
U) $\{-4, 2, -2\}$
W) $\{4, 2i, -2i\}$
X) $\{-4, 2i, -2i\}$
Z) None of T), U), W), and X).

(7-119 T) x^3+4x^2+2x+8 factors into

(315)
A) $(x+2)^3$
B) $(x+2)(x^2+2)$
C) $(x+4)(x^2+4)$
D) $(x+4)(x^2+2)$
E) None of A), B), C), and D).

(7-119 B)

(316) Factoring $b^{2/3}$ out of $b^{7/3}$: $b^{7/3}=b^{2/3}\cdot$ ___

Fill in the blank with

F) b^5
G) $b^{7\cdot\frac{3}{2}}$
H) $b^{7/2}$
J) $b^{5/2}$
K) None of F), G), H), and J).

(7-119B)

(317) Factoring $b^{-\frac{1}{5}}$ out of $b^{\frac{4}{5}}$: $b^{\frac{4}{5}} = b^{-1/5} \cdot$ ______

Fill in the blank with

L) $b^{3/5}$

M) $b^{-3/5}$

Θ) b

P) b^{-4}

R) None of L), M), Θ), and P).

(7-119B)

(318) Factoring $b^{-\frac{1}{5}}$ out of $b^{\frac{4}{5}}$: $b^{\frac{4}{5}} = b^{-\frac{1}{5}} \cdot b^{\frac{4}{5} - \square}$

Fill in the box $\square$ with

S) $-\frac{1}{5}$

T) $\frac{1}{5}$

U) $\frac{4}{5}$

W) 1

X) None of S), T), U), and W).

(7-<u>119A</u>, T)

③①⑨ Factoring $(2x+1)^{-\frac{1}{3}}$ out of $(2x+1)^{2/3}$:

$$(2x+1)^{\frac{2}{3}} = (2x+1)^{-1/3}(2x+1)^{\frac{2}{3}-\square}$$

Fill in the box $\square$ with

A) $\frac{1}{3}$

B) $-\frac{1}{3}$

C) 1

D) $2/3$

E) None of A), B), C), and D).

(7-<u>119A</u>, M)

③②⓪ Solving $\frac{7}{3}(x+3)^{\frac{5}{3}}(2x-1)^{\frac{1}{6}}+\frac{5}{3}(2x-1)^{\frac{7}{6}}(x+3)^{\frac{2}{3}}=0$ the first step taught was the factoring step

$$(x+3)^{\square}(2x-1)^{\bigcirc}\left[\frac{7}{3}(x+3)^{\frac{5}{3}-\frac{2}{3}}+\frac{5}{3}(2x-1)^{\frac{7}{6}-\frac{1}{6}}\right]=0$$

F) Fill in $\square$ with $\frac{5}{3}$; fill in $\bigcirc$ with $\frac{7}{6}$

G) Fill in $\square$ with $5/3$; fill in $\bigcirc$ with $1/6$

H) Fill in $\square$ with $\frac{2}{3}$; fill in $\bigcirc$ with $\frac{7}{6}$

J) Fill in $\square$ with $\frac{2}{3}$; fill in $\bigcirc$ with $1/6$

K) None of F), G), H), and J).

(7-<u>119A</u>, M)

(321) In solving $\frac{7}{3}(x+3)^{\frac{5}{3}}(2x-1)^{\frac{1}{6}}+\frac{5}{3}(2x-1)^{7/6}(x+3)^{2/3}=0$ the correct first factoring step was

L) $(x+3)^{2/3}(2x-1)^{\frac{1}{6}}\left[\frac{7}{3}(x+3)^{\frac{5}{3}}+\frac{5}{3}(2x-1)^{\frac{7}{6}}\right]=0$

M) $(x+3)^{2/3}(2x-1)^{\frac{1}{6}}\left[\frac{7}{3}(x+3)^{\frac{5}{3}-\frac{2}{3}}+\frac{5}{3}(2x-1)^{\frac{7}{6}-\frac{1}{6}}\right]=0$

θ) $\frac{7}{3}(x+3)^{2/3}(2x-1)^{1/6}\left[(x+3)^{\frac{5}{3}}+\frac{5}{3}(2x-1)^{7/6}\right]=0$

P) $\frac{7}{3}(x+3)^{2/3}(2x-1)^{\frac{1}{6}}\left[(x+3)^{\frac{5}{3}-\frac{2}{3}}+\frac{5}{3}(2x-1)^{\frac{7}{6}-\frac{1}{6}}\right]=0$

R) None of L), M), θ), and P).

(7-<u>119A</u>, M, B)

(322) $(x+3)^{2/3}(2x-1)^{\frac{1}{6}}\left[\frac{7}{3}(x+3)+\frac{5}{3}(2x-1)\right]=0$

Simplifying this gives

S) $\frac{(x+3)^{2/3}}{(2x-1)^{1/6}}\left[\frac{17}{3}x-\frac{16}{3}\right]=0$

T) $(x+3)^{2/3}(2x-1)^{1/6}\left[\frac{17}{3}x-2\right]=0$

U) $(x+3)^{2/3}(2x-1)^{1/6}\left[\frac{17}{3}x-\frac{16}{3}\right]=0$

W) $(x+3)^{\frac{2}{3}}(2x-1)^{\frac{1}{6}}\left[\frac{17}{3}x+\frac{16}{3}\right]=0$

X) None of S), T), U), and W).

(7-<u>119A</u>, B) The solution set for

(323) $(x+3)^{2/3}(2x-1)^{1/6}\left[\frac{17}{3}x+\frac{16}{3}\right]=0$ is

A) $\{-3, -16/17, 1/2\}$
B) $\{3, 16/17, -1/2\}$
C) $\{16/17\}$
D) $\{-16/17\}$
E) None of A), B), C), and D).

(7-120 T)

(324) Solving $\frac{6}{5}(2x+1)^{2/3}(x+5)^{\frac{1}{5}}+\frac{4}{3}(x+5)^{\frac{6}{5}}(2x+1)^{-1/3}=0$

the first step taught was the factoring step

$(2x+1)^{\square}(x+5)^{⬭}\left[\frac{6}{5}(2x+1)^{2/3-(-1/3)}+\frac{4}{3}(x+5)^{\frac{6}{5}-1/5}\right]=0$

F) Fill in $\square$ with $-1/3$; fill in ⬭ with $\frac{6}{5}$.
G) Fill in $\square$ with $-1/3$; fill in ⬭ with $1/5$.
H) Fill in $\square$ with $2/3$; fill in ⬭ with $6/5$.
J) Fill in $\square$ with $\frac{2}{3}$; fill in ⬭ with $1/5$.
K) None of F), G), H), and J).

(7 - 120T)

(325) In solving $\frac{6}{5}(2x+1)^{\frac{2}{3}}(x+5)^{\frac{1}{5}} + \frac{4}{3}(x+5)^{\frac{6}{5}}(2x+1)^{-\frac{1}{3}} = 0$ the correct first factoring step was

L) $\frac{6}{5}(2x+1)^{-1/3}(x+5)^{1/5}\left[(2x+1)^{2/3} + \frac{4}{3}(x+5)^{6/5}\right] = 0$

M) $\frac{6}{5}(2x+1)^{-1/3}(x+5)^{\frac{1}{5}}\left[(2x+1)^{\frac{2}{3}-(-\frac{1}{3})} + \frac{4}{3}(x+5)^{\frac{6}{5}-\frac{1}{5}}\right] = 0$

θ) $(2x+1)^{-\frac{1}{3}}(x+5)^{\frac{1}{5}}\left[\frac{6}{5}(2x+1)^{2/3-(-1/3)} + \frac{4}{3}(x+5)^{\frac{6}{5}-\frac{1}{5}}\right] = 0$

P) $(2x+1)^{-1/3}(x+5)^{\frac{1}{5}}\left[\frac{6}{5}(2x+1)^{2/3} + \frac{4}{3}(x+5)^{\frac{6}{5}}\right] = 0$

R) None of L), M), θ), and P).

(7-120)

(326) $(2x+1)^{-1/3}(x+5)^{1/5}\left[\frac{6}{5}(2x+1)^{\frac{2}{3}-(-\frac{1}{3})} + \frac{4}{3}(x+5)^{\frac{6}{5}-\frac{1}{5}}\right] = 0$

Simplifying this gives.

S) $\frac{(x+5)^{1/5}}{(2x+1)^{-1/3}}\left[\frac{56}{15}x + \frac{118}{15}\right] = 0$

T) $\frac{(x+5)^{1/5}}{(2x+1)^{1/3}}\left[\frac{56}{15}x - \frac{118}{15}\right] = 0$

U) $\frac{(x+5)^{\frac{1}{5}}}{(2x+1)^{1/3}}\left[\frac{56}{15}x + \frac{118}{15}\right] = 0$

W) $\frac{(x+5)^{1/5}}{(2x+1)^{-1/3}}\left[\frac{56}{15}x - \frac{118}{15}\right] = 0$

X) None of S), T), U), and W).

(7-120 M, B)

③②⑦ The solution set for

$$\frac{(x+5)^{\frac{1}{5}}}{(2x+1)^{\frac{1}{3}}}\left[\frac{56}{15}x+\frac{118}{15}\right]=0 \quad \text{is}$$

A) $\{-5, -\frac{1}{2}, -\frac{59}{28}\}$

B) $\{5, \frac{1}{2}, \frac{59}{28}\}$

C) $\{-5, -\frac{59}{28}\}$

D) $\{5, \frac{59}{28}\}$

E) $\{-\frac{59}{28}\}$

F) $\{\frac{59}{28}\}$

G) None of A), B), C), D), E), and F).

(7-121 M, B)

(328) Suppose you wanted to find all real solutions to $\sqrt{x}=-3$. Square both sides to get $x=9$. Is the solution set for "$\sqrt{x}=-3$" $\{9\}$?

Y) Yes

N) No

(7-121B)

(329) As taught, extraneous solutions can come from any one of which 2 ways:

H) Multiplying by an expression involving a variable that could be 0 and cubing both sides.

J) Multiplying both sides of an equation by a negative number and cubing both sides.

K) Multiplying by an expression involving a variable that could be 0 and squaring both sides

L) Multiplying both sides of an expression by a negative number and squaring both sides.

M) None of H), J), K), and L).

(7-122 T, M)

(330) Beginning steps for finding all real solutions were

$$x + \sqrt{x+3} = 9$$
$$\sqrt{x+3} = 9 - x$$

A correct next step is:

N) $x+3 = |9-x|$

O) $x+3 = \pm(9-x)$

P) $|x+3| = 9-x$

R) $x+3 = 81 - x^2$

S) $x+3 = 81 + x^2$

T) $x+3 = 81 - 18x + x^2$

U) None of N), O), P), R), S), and T)

(7-122)

(331) Solving $x+\sqrt{x+3}=9$ to find all real solutions, $\sqrt{x+3}$ was isolated, both sides of the equation were squared, the equation $0=x^2-19x+78$ was derived and solved to give $x=6$ or $x=13$. The solution set is

A) $\{6\}$

B) $\{13\}$

C) $\{6, 13\}$

D) $\{\ \}$

E) None of A), B), C), and D).

(7-123 T)

(332) Beginning steps for finding all real solutions were

$$\sqrt{8+x}+\sqrt{1+x}-\sqrt{41-x}=0$$
$$\sqrt{8+x}+\sqrt{1+x}=\sqrt{41-x}$$
$$\left(\sqrt{8+x}+\sqrt{1+x}\right)^2=\left(\sqrt{41-x}\right)^2$$

A correct next step is

F) $8+x+1+x=41-x$

G) $|8+x|+|1+x|=|41-x|$

H) $8+x+2\sqrt{8+x}\sqrt{1+x}+1+x=41-x$

J) None of F), G), and H).

(7-123, 124)

(333) The solution set for $\sqrt{8+x}+\sqrt{1+x}-\sqrt{41+x}=0$ is

K) $\{8, \frac{3}{124}\}$
L) $\{8, -\frac{124}{3}\}$
M) $\{8\}$
Θ) $\{\ \}$
P) $\{-8, \frac{124}{3}\}$
R) $\{-8, -\frac{124}{3}\}$
S) $\{-8\}$
T) None of K), L), M), Θ), P), R), and S).

(7-123 M, B)

(334) Suppose you have

$2\sqrt{8+x}\sqrt{1+x}=32-x$, what is a line that can be derived from squaring both sides?

A) $4(8+x^2)=1024-x^2$
B) $4(8+x^2)=1024+x^2$
C) $4(8+9x+x^2)=1024-x^2$
D) $4(8+9x+x^2)=1024+x^2$
E) $4(8+9x+x^2)=1024-64x-x^2$
F) $4(8+9x+x^2)=1024-64x+x^2$
G) $4(8+9x+x^2)=1024-32x+x^2$
H) None of A), B), C), D), E), F), and G)

(7-123,124)

335 Solving $\sqrt{8+x}+\sqrt{1+x}-\sqrt{41+x}=0$ to find all real solutions, radicals were isolated, both sides of equations were squared twice, the equation $3x^2+100x-992=0$ was derived to give $x=8$ or $x=-\frac{124}{3}$. The solution set for the original equation is

J) $\{8, -\frac{124}{3}\}$

K) $\{-\frac{124}{3}\}$

L) $\{8\}$

M) $\{\ \}$

O) None of J), K), L), and M).

(7-124)

336 The original equation to be solved is $\sqrt{8+x}+\sqrt{1+x}-\sqrt{41+x}=0$. After isolating a radical and squaring both sides, it was initially derived that $x=8$ or $x=\frac{-124}{3}$. In the process to check $x=8$, 8 was subtituted in for x in the left side of the original equation. What value does the left side evaluate to in that case?

P) 14

Q) 16+9-49

R) the left side is undefined for $x=8$.

S) None of P), Q), and R).

(7-124)

(337) The original equation to be solved is $\sqrt{8+x} + \sqrt{1+x} - \sqrt{41+x} = 0$. In the process to derive solution(s), both sides of equations were squared a couple of times, so answers need to be checked. One answer that was derived was $x=8$. Then when 8 is substituted for x in the left side of the original equation, the left side evaluated to 0. The value of the right side is 0. So this means

T) 8 is in the solution set.
U) 0 is in the solution set
W) 8 is an extraneous solution
X) 0 is an extraneous solution
Z) None of T), U), W), and X).

(7-126)

(338) $x^4 - x^2 - 12 = 0$ is an equation in quadratic form. This can be seen by substituting $w = x^2$ into the original equation. What is the solution set for the original equation? Real and complex solutions are allowed.

A) $\{4, -3\}$
B) $\{\pm 4, \pm 3\}$
C) $\{-4, +3\}$
D) $\{\pm 2, \pm\sqrt{3}\}$
E) $\{\pm 2, \pm i\sqrt{3}\}$
F) None of A), B), C), D), and E).

③③⑨ To find all real and complex solutions for $x^4 - x^2 - 12 = 0$ it can be recognized as an equation in quadratic form. A substitution of $w =$ ____ in the equation will change it to a quadratic. Fill in the blank with

G. $\sqrt{x}$
H. x^2
J. x^4
K. None of G), H), and J).

(7-126 M)

③④⓪ What is the solution set for $x^2 = -3$ (Real and complex solutions).

L) $\{3i, -3i\}$
M) $\{-\sqrt{3}, \sqrt{3}\}$
θ) $\{3\sqrt{i}, -3\sqrt{i}\}$
P) $\{i\sqrt{3}, -i\sqrt{3}\}$
R) None of L), M), θ), and P).

(7-126B)

③④① $(x^3-5)^2 + 3(x^3-5) - 18 = 0$ is an equation in quadratic form. A substitution of $w =$ ____ will change it to a quadratic. Fill in the blank with

S) x^3-5
T) $\sqrt{x^3-5}$
U) $(x^3-5)^2$
W) None of S), T), and U).

(7-126B, 7-127T)

(342) Find all real solutions: The solution set for $(x^3-5)^2+3(x^3-5)-18=0$ is

A) $\{3,-6\}$
B) $\{-3,6\}$
C) $\{-1,8\}$
D) $\{-1,2\}$
E) None of A), B), C), and D).

(7-127 M)

(343) $x^{4/3}-7x^{2/3}-8=0$ is an equation in quadratic form. A substitution of $w=$ _____ will change it to a quadratic. Fill in the blank with

F) $\sqrt{x^{2/3}}$
G) $x^{1/3}$
H) $x^{4/3}$
J) None of F), G), and H).

(7-127M)

(344) Find all real and complex solutions for $x^{4/3}-7x^{2/3}-8=0$

K) $\{8,-1\}$
L) $\{8i,-i\}$
M) $\{16\sqrt{2}, i\}$
P) $\{-16\sqrt{2}, 16\sqrt{2}, i, -i\}$
Q) $\{-i\sqrt{2}, i\sqrt{2}, i, -i\}$
R) $\{-8i, 8i, -1, 1\}$
S) None of K), L), M), P), Q), and R).

(7-127B)

(345) Find all real and complex solutions:
The solution set for $x^{\frac{2}{3}} = -1$ is.

T) $\{-1, 1\}$
U) $\{-\sqrt{i}, \sqrt{i}\}$
W) $\{-\sqrt[3]{i}, \sqrt[3]{i}\}$
X) $\{-i, i\}$
Z) None of T), U), W), and X).

(7-127 B)

(346) Find all real and complex solutions: $x^{2/3} = 8$

A) $\{4\}$
B) $\{-2, 2\}$
C) $\{-16\sqrt{2}, 16\sqrt{2}\}$
D) $\{-\sqrt{2}, \sqrt{2}\}$
E) None of A), B), C), and D).

(7-128 T)

(347) Find all real solutions: $x^{\frac{3}{2}} = 8$.
The solution set is

F) $\{4\}$
G) $\{-16\sqrt{2}, 16\sqrt{2}\}$
H) $\{-2, 2\}$
J) $\{-4, 4\}$
K) $\{2\}$
L) None of F), G), H), J), and K).

(7-128 M)

(348) To begin solving $x^{3/2} = 8$ you

M) cube both sides and get $x^{1/2} = 2$.

O) take the cube root of both sides and get $x^{1/2} = 8^3$

P) square both sides and get $x^3 = \sqrt{8}$.

R) square both sides and get $x^3 = 64$.

S) None of M), O), P), and R).

(7-128 M)

(349) To begin solving $(x^2+12)^{3/4} = x^3$ you

A) Take the fourth root of both sides and get $(x^2+12)^3 = x^{3/4}$.

B) Raise both sides to the fourth power and get $(x^2+12)^3 = x^{3/4}$.

C) Take the cube root of both sides and get $(x^2+12)^{1/4} = x^{3/4}$.

D) Raise both sides to the fourth power and get $(x^2+12)^3 = x^{12}$

E) None of A), B), C), and D).

(7-128 M)

(350) A line that follows from $(x^2+12)^3 = x^{12}$ is

F) $0 = x^4 - x^2 - 12$

G) $0 = x^{12} - x^2 - 12$

H) $0 = x^{12} - x^6 - 12^3$

J) $0 = x^4 + x^2 + 12$

K) None of F), G), H), and J).

(7-128 M,B)

(351) By letting $w=x^2$ and substituting in the equation $0=x^4-x^2-12$ it can be derived that

L) $w=6$ or $w=-2$
M) $w=-6$ or $w=2$
O) $w=-4$ or $w=3$
P) $w=4$ or $w=-3$
R) None of L); M), O), and P)

(7-128 M,B; 7-129)

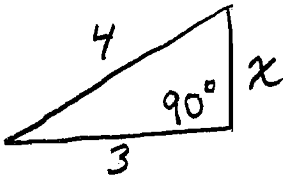
(352) Find all real and complex solutions for

$(x^2+12)^{\frac{3}{4}}=x^3$

S) $\{-2, 2, -i\sqrt{3}, i\sqrt{3}\}$
T) $\{-2, 2\}$
U) $\{2\}$
W) $\{-i\sqrt{3}, i\sqrt{3}\}$
X) $\{i\sqrt{3}\}$
Z) None of S), T), U), W), and X).

(8-131 B)

(353) Find x.

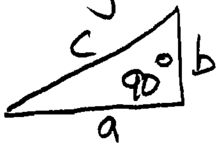


$x =$

A) 5
B) 7
C) $\sqrt{7}$
D) 25
E) None of A), B), C), and D).

(8-131 M)

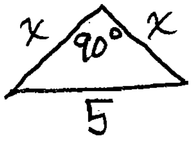
354 According to the Pathagorean Theorem



F) $a + b = c$
G) $a^2 + b^2 = c^2$
H) $\sqrt{a} + \sqrt{b} = \sqrt{c}$
J) $b^2 + c^2 = a^2$
K) None of F), G), H), and J).

(8-132)

355 Find x :



L) $x = \frac{5\sqrt{2}}{2}$
M) $x = 5\sqrt{2}$
θ) $x = \frac{25}{2}$
P) None of L), M), and θ).

(8-132 M)

356 If you travel 150 miles in $2\frac{1}{2}$ hours, what is your rate in miles per hour?

Q) 375
R) 45
S) 60
T) 75
U) None of Q), R), S), and T).

(8-133T)

(357) Seven steps were given for solving a word problem. What is the left out step in the list below?

1. Read the problem to understand it.
2. Draw a picture
3. Name your variables
4. ________________
5. Solve the equation.
6. Check your answer.
7. Answer the question

A) Square both sides
B) Rephrase the problem to clearer English.
C) Evaluate your answer.
D) Get an equation
E) None of A), B), C), and D).

(8-134)

(358) A rectangular door has its height 3 feet more than its width. The diagonal length of the door is 7 feet. What is the equation for this when x is the width?

F) $x^2 + (x-3)^2 = 7^2$
G) $x^2 + 7^2 = (x-3)^2$
H) $(x+3)^2 + 7^2 = x^2$
J) $x^2 + 7^2 = (x+3)^2$
K) $x^2 + (x+3)^2 = 7^2$
L) None of F), G), H), J), and K).

(8-134, 135)

359) A rectangular door has its height 3 feet more than its width. The diagonal length of the door is 7 feet. What is the <u>area</u> of the door? (SQ. FEET)

M) $\frac{-3+\sqrt{89}}{2}$

O) $\frac{-3-\sqrt{89}}{2}$

P) Both $\frac{-3+\sqrt{89}}{2}$ and $\frac{-3-\sqrt{89}}{2}$ are acceptable answers

R) 20

S) $\frac{98}{4}$

T) None of M), O), P), R), and S).

(8-134, 135)

360) A rectangular door has its height 3 feet more than its width. The diagonal length of the door is 7. feet. The <u>area</u> of the door in square feet is to be found. Let x be the <u>width</u> of the door. Solving the proper equation, x is found and checked to be $\frac{-3+\sqrt{89}}{2}$. What number is x multiplied by to give the <u>area</u>.?

U) $\frac{-3+\sqrt{89}}{2} - 3$

W) $\frac{3+\sqrt{86}}{2}$

X) $\frac{3+\sqrt{89}}{2}$

Z) None of U), W), and X).

(8-134,135)

(361) A rectangular door has its height 3 feet more than its width. The diagonal length of the door is 7 feet. Let x be the width of the door. When the value of x is found that value for x can be checked to see if it is correct by seeing if

A) $x^2 + (x-3)^2 = \frac{-3+\sqrt{89}}{2}$

B) $x^2 + (x+3)^2 = \frac{3+\sqrt{89}}{2}$

c) $x + (x+3) = 7$

D) $x^2 + (x+3)^2 = 7^2$

E) $x - (x+3) = 7$

F) None of A), B), c), D), and E).

(8-136)

(362) A lover of square roots wants to cut a 12 foot board into 3 pieces, 2 shorter pieces of equal length and 1 longer piece. The longer piece is to be $\sqrt{2}$ feet longer than a shorter piece. Find the lengths of the pieces. Let x be the shorter piece length. What equation is to be solved?

G. $(x-\sqrt{2}) + (x-\sqrt{2}) + x = 12$

H. $x + x + (x+\sqrt{2}) = 12$

J. $x + x + (x-\sqrt{2}) = 12$

K. None of G), H), and J).

(8-137)

(363) The area of a rectangle has a numerical value that is 3 more than the perimeter. The height is twice the width. What is the height of the rectangle? Let x be the width of the rectangle. What is the equation to be solved?

L) $2x^2 = 6x+3$
M) $x+2x = x+2x+x+2x+3$
O) $x(2x) = x+2x+x+2x-3$
P) $x(\frac{1}{2}x) = x+2x+x+2x+3$
Q) None of L), M), O), and P).

(8-137, 138)

(364) The area of a rectangle has a numerical value that is 3 more than the perimeter. The height is twice the width. What is the height of the rectangle? Let x be the width of the rectangle. In solving this problem it is found that $x = \frac{3+\sqrt{15}}{2}$. In checking the answer the area for the rectangle was found. What is the area?

R) Area $= \left(\frac{3+\sqrt{15}}{2}\right)\left(\frac{3-\sqrt{15}}{2}\right)$
S) Area $= 12-3\sqrt{15}$
T) Area $= 12+3\sqrt{15}$
U) Area $= \frac{3+\sqrt{15}}{2} + 2\left(\frac{3+\sqrt{15}}{2}\right)$
W) Area $= (3+\sqrt{15})2(3+\sqrt{15})$
X) None of R), S), T), U), and W).

③⑥⑤ Mixture problem: Sam has 200 gallons of liquid A that is 10% sugar. How many gallons of liquid B, which is 40% sugar, should Sam mix with liquid A to make a solution that is 20% sugar? Let x be the number of gallons of 40% solution to be mixed. The equation to be solved is:

A) $x(.10) + x(.40) = (200)(.10)$
B) $200(.10) + x(.10) = (200+x)(.40)$
C) $200(.10) + x(.10) = (200)(.40)$
D) $200(.10) + x(.40) = (200+x)(.20)$
E) None of A), B), C), and D).

(8-139, 140T)

③⑥⑥ Mixture problem: Sam has 200 gallons of liquid A that is 10% sugar. How many gallons of liquid B, which is 40% sugar, should Sam mix with liquid A to make a solution that is 20% sugar? Let x be the number of gallons of 40% solution to be mixed. In the process of solving the problem the amount of sugar in the final solution is calculated and found to be

F) $(200+x)(.20)$
G) $(200)(.20)$
H) $(200+x)\left(\frac{.10+.40}{2}\right)$
J) $(200)(x)(.20)$
K) None of F), G), H), and J).

(8-143T)

(367) Sam takes 5 hours to do a job. For each hour how much of the job gets done per hour?

L) $5 \text{ JOB}/\text{HOUR}$

M) $\frac{1}{5} \text{ JOB}/\text{HOUR}$

θ) $\frac{1}{5^2} \text{ JOB}/\text{HOUR}$

P) NONE OF L), M), AND θ).

(8-143 M)

(368) Sue takes 7 hours to do a job. For each hour how much of the job gets done per hour?

Q) $\frac{1}{7} \text{ JOB}/\text{HOUR}$

R) $7 \text{ JOB}/\text{HOUR}$

S) $\frac{1}{7^2} \text{ JOB}/\text{HOUR}$

T) None of Q), R), and S).

(8-143B, 144T)

(369) Sam takes 5 hours to mow a yard. What fraction of the job does Sam get done in 3 hours?

U) $\frac{5}{3}$

W) $\frac{1}{3 \cdot 5}$

X) $\frac{3}{5}$

Z) None of U), W) and X).

(8-143,144)

(370) Sam takes 5 hours to mow a yard. Sam works x hours. What fraction of the job does Sam get done?

A) $5x$
B) $x(\frac{1}{5})$
C) $1\frac{1}{5}x$
D) None of A), B), and C)

(8-143,144,145)

(371) Sam takes 5 hours to mow a yard. Sue takes 7 hours to mow the yard. Let x be the time it takes to get the job done with Sam and Sue working together. What is the equation to be solved?

E) $5x+7x=1$
F) $\frac{5}{x}+\frac{7}{x}=1$
G) $\frac{x}{5}+\frac{x}{7}=1$
H) $\frac{x}{5}+\frac{x}{7}=12$
J) None of E), F), G), and H).

(8-145B)

(372) Find the value for x when $\frac{x}{5}+\frac{x}{7}=1$.

K) $x=\frac{35}{12}$
L) $x=\frac{12}{35}$
M) $x=\frac{1}{12}$
P) $x=6$
Q) None of K), L), M), and P).

(8-146)

(373) Sam runs at a rate of 4 miles per hour. Sam runs for 90 minutes and in addition to that runs for T hours. What is the total distance Sam runs?

R) $4(90+T)$

S) $\frac{4}{90+T}$

T) $4(\frac{3}{2}+T)$

U) $\frac{4}{3/2+T}$

W) None of R), S), T), and U).

(8-146T)

(374) Which is the true formula?

A) Distance = $\frac{\text{Rate}}{\text{Time}}$

B) Rate = (Distance)(Time)

C) Time = (Distance)(Rate)

D) Distance = (Rate)(Time)

E) None of A), B), C), and D).

(8-146 M,B)

(375) Bob runs at a rate of 7 miles per hour. Bob runs for T hours. What is the distance Bob runs?

F) $7T$

G) $\frac{7}{T}$

H) $\frac{T}{7}$

J) None of F), G), and H).

(8-146)

376 Sam can run at a rate of 4 miles per <u>hour</u>. Bob can run at a rate of 7 miles per hour. Sam starts running away in a straight line 90 <u>minutes</u> before Bob starts. How long will it take Bob to catch Sam? Let **T** be the <u>time</u> Bob runs until he catches Sam. What is the equation to be solved?

K) $7(90+T)=4T$
L) $4(90+T)=7T$
M) $7(\frac{3}{2}+T)=4T$
O) $4(\frac{3}{2}+T)=7T$
P) None of K), L), M), and O).

(8-147)

377 Which is the correct formula?

Q) Interest = $\frac{\text{Principal}}{(\text{Rate})(\text{Time})}$
R) Principal = (Interest)(Rate)(Time)
S) Rate = (Principle)(Interest)(Time)
T) Time = (Principle)(Rate)(Interest)
U) Interest = (Principle)(Rate)(Time)
W) None of Q), R), S), T), and U).

(8-147,148)

(378) Let P be the original principal deposited in a savings account that yields 4% compounded annually. How much is in the account after <u>one</u> year?

A) $P+(.04)1$
B) P
C) $P(.04)1$
D) $P+P(.04)1$
E) None of A), B), C), and D).

(8-147,148)

(379) Let P be the original principal deposited in a savings account that yields 4% compounded annually. How much is in the account after <u>two</u> years?

F) $(P+P(.04)1)+(P+P(.04)1)$
G) $(P+P(.04)1)+(.04)$
H) $(P+P(.04)1)+(P+P(.04)1)(.04)$
J) $(P+P(.04)1)(.04)$
K) None of F), G), H), and J).

(8-148)

(380) Solve $(P+P(.04)1)+(P+P(.04)1)(.04)=2000$

L) $P=\frac{2000}{1+.04}$

M) $P=\frac{2000}{(1.04)^2}$

θ) $P=2000(1.04)$

R) $P=2000(1.04)^2$

S) None of L), M), θ), and R).

(8-148M)

(381) True or False $(P+P(.04)1)+(P+P(.04)1)(.04)=(P+P(.04))(1+.04)$

T) True

F) False

(8-147,148)

(382) How much money will Sam have to deposit in an account now so that 2 years from now Sam will have \$2000 (the account yields 4% compounded annually).

T) $\frac{2000}{2(1.04)}$ dollars

U) $\frac{2000}{(1.04)}$ dollars

W) $2000-(1.04)^2$

X) $(2000)(1.04)^2$

Z) None of T), U), W), and X).

(9-151T)

(383) Which is the definition for the open interval from a to b?

A) $(a,b) = \{x \mid a < x < b\}$
B) $(a,b) = \{x \mid a \le x \le b\}$
C) $(a,b) = \{x \mid a > x > b\}$
D) None of A), B), and C)

(9-151T)

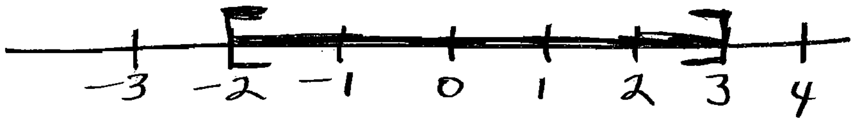
(384) True or False: $3 \notin (-2,3)$
T) True
F) False

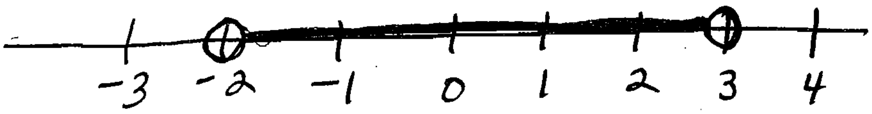
(9-151T)

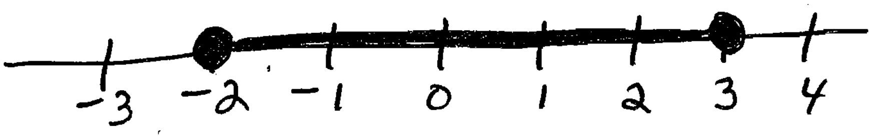
(385) True or False: $\frac{1}{2} \in (-2,3)$
T) True
F) False

(9-151M)

(386) Which is a picture of $(-2,3)$?

E)


F)


G)


H) None of E), F), and G).

(9-151 B)

387 $a<x<b$ means

J) $a<x$ OR $x<b$
K) if $a<x$, then $x<b$
L) $a<x$ AND $x<b$
M) None of J), K), and L).

(9-151 B)

388 The definition of (a,∞) is

N) $\{x \mid x>a\}$
O) $\{x \mid x<a\}$
P) $\{x \mid x<\infty\}$
R) $\{x \mid x\le a\}$
S) None of N), O), P), and R)

(9-152 T)

389 True or False: $-\frac{1}{2} \in (-1,\infty)$

T) True
F) False

(9-152 T)

390 True or False: $-2 \in (-1,\infty)$

T) True
F) False

(9-152 T)

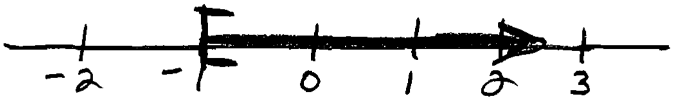
391 True or False: $-1 \notin (-1,\infty)$

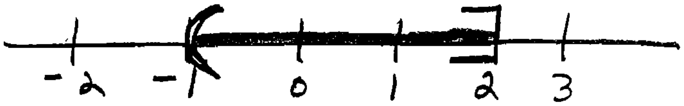
T) True
F) False

(9-152 T)

(392) which is a picture of $(-1, \infty)$?

T) 

U) 

W) 

X) None of T), U), and W).

(9-152 M)

(393) The definition of $(-\infty, a)$ is

A) $\{x \mid x > a\}$

B) $\{x \mid a < x\}$

C) $\{x \mid x \leq a\}$

D) None of A), B), and C)

(9-152 B)

(394) True or false: $-4 \in (-\infty, -3)$

T) True

F) False

(9-152 B)

(395) True or false: $-3 \in (-\infty, -3)$

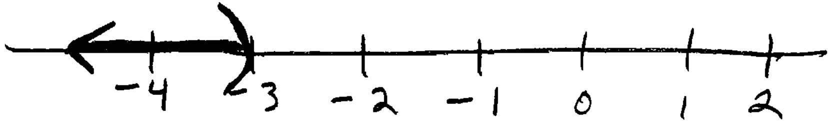
T) True

F) False

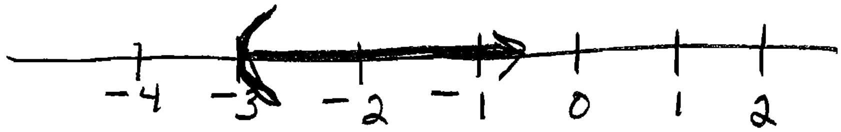
(9-152B)

③⑨⑥ which is a picture of $(-\infty, -3)$?

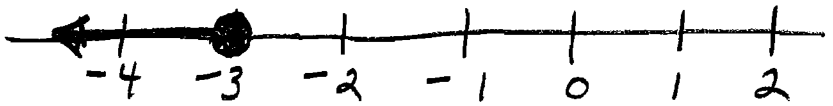
E)



F)



G)



H) None of E), F), and G.

(9-153T)

(397) The open interval $(-\infty, \infty)$ is another way of denoting the set of

J) Integers
K) Positive integers
L) Real Numbers
M) Rational Numbers
P) None of J), K), L), and M).

(9-153M)

(398) The definition of $[a, b]$ is

Q) $\{x \mid x > a \text{ OR } x < b\}$
R) $\{x \mid a < x \text{ OR } x < b\}$
S) $\{x \mid a < x < b\}$
T) $\{x \mid a \leq x \leq b\}$
U) $\{x \mid a \leq x \text{ OR } x \leq b\}$
W) None of Q), R), S), T), and U).

(9-153T)

(399) True or False: $-2 \in [-2,3]$

T) True

F) False

(9-153T)

(400) True or False: $-\frac{1}{2} \in [-2,3]$

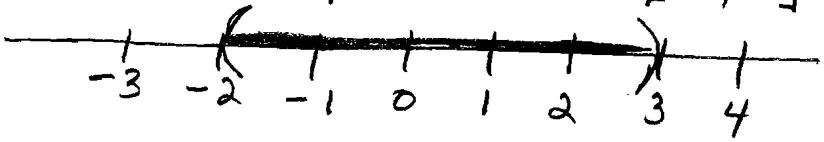
T) True

F) False

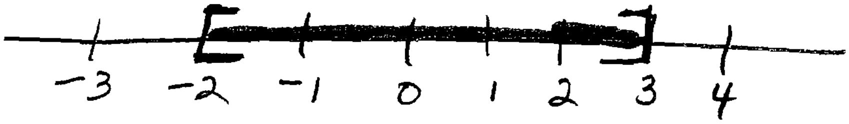
(9-153 M)

(401) Which is a picture of $[-2,3]$?

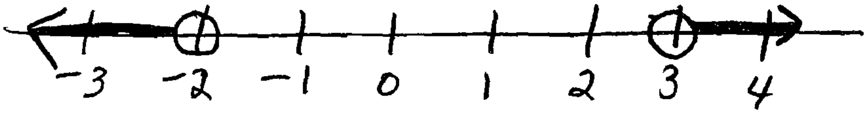
A)



B)



C)



D) None of A), B), and C).

(9-153 B)

(402) The definition of $[a, \infty)$ is

E) $\{x \mid x > a\}$

F) $\{x \mid x \geq a\}$

G) $\{x \mid a < x\}$

H) $\{x \mid a \geq x\}$

J) None of E), F), G), and H).

(9-154T)

403 True or False: $-\frac{3}{2} \varepsilon [-1, \infty)$

T) True

F) False

(9-154T)

404 True or False $-1 \varepsilon [-1, \infty)$

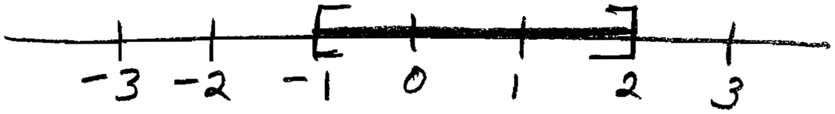
T) True

F) False

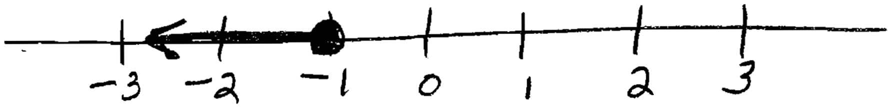
(9-154T)

405 Which is a picture of $[-1, \infty)$

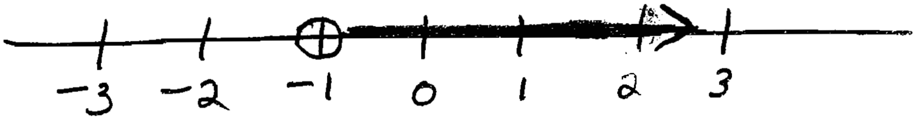
K)



L)



M)



P) None of K), L), and M.

(9-154B)

406 The definition of $(-\infty, a]$ is

Q) $\{x \mid x < a\}$

R) $\{x \mid a \leq x\}$

S) $\{x \mid x \leq a\}$

T) None of Q), R), and S).

(9-154B)

(407) True or False: $-4 \in (-\infty,-3]$

T) True

F) False

(9-154B)

(408) True or False: $-2 \in (-\infty,-3]$

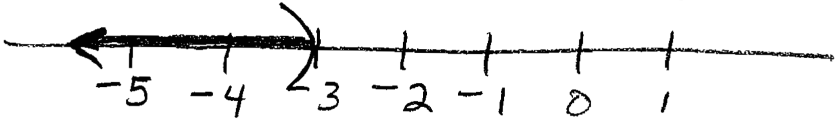
T) True

F) False

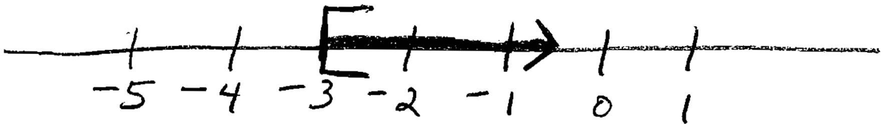
(9-154B)

(409) Which is a picture of $(-\infty,-3]$?

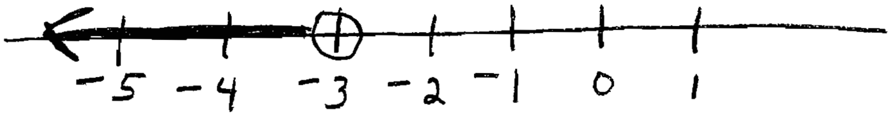
u)



w)



x)



z) None of u), w), and x).

(9-155T)

(410) How is $[a,b)$ <u>read</u>?

A) The half open interval from a to b.

B) The half open interval from a to b, open at a.

C) The half open interval from a to b, closed at a.

D) None of A), B), and C).

(9-155M)

(411) How is $[-1,3)$ defined?

E) $\{x \mid -1 \geq x > 3\}$

F) $\{x \mid -1 \leq x < 3\}$

G) $\{x \mid -1 \geq x \text{ OR } x > 3\}$

H) $\{x \mid -1 \leq x \text{ OR } x < 3\}$

J) None of E), F), G), and H).

(9-155 M)

(412) True or False: $-1 \notin [-1,3)$

T) True

F) False

(9-155 M)

(413) True or False: $3 \in [-1,3)$

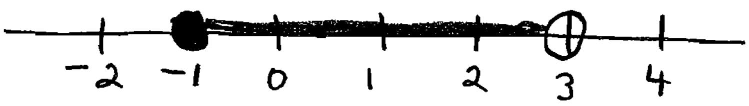
T) True

F) False

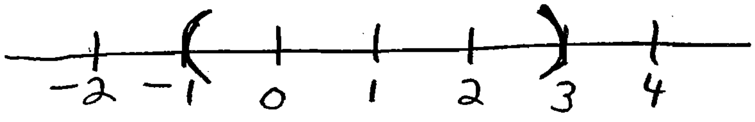
(9-155 B)

(414) which is a picture of $[-1,3)$?

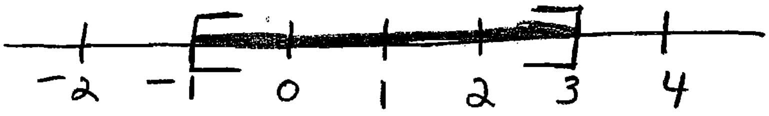
K)



L)



M)



O) None of K), L), and M).

(9-155A, T)

(415) How is $(a, b]$ read?

P) The half open interval from a to b, closed at b.

Q) The half open interval from a to b.

R) The half open interval from a to b, open at b.

S) None of P), Q), R), and S).

(9-155A, M)

(416) How is $(-1, 3]$ defined?

T) $\{x \mid -1 < x < 3\}$

U) $\{x \mid -1 > x \geq 3\}$

W) $\{x \mid -1 \leq x \leq 3\}$

X) $\{x \mid -1 \geq x > 3\}$

Z) None of T), U), W), and X).

(9-155A, M)

(417) True or False: $-2 \in (-1, 3]$

T) True

F) False

(9-155A, M)

(418) True or False: $-1 \notin (-1, 3]$

T) True

F) False

(9-155A, m)

419) True or False: $4.23 \notin (-1,3]$

T) True

F) False

(9-155A, m)

420) True or False: $\frac{1}{2} \in (-1,3]$

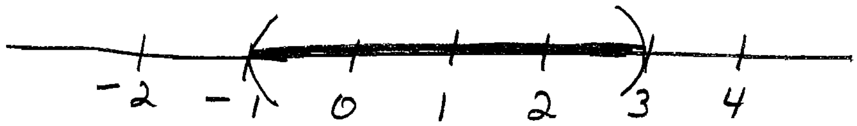
T) True

F) False

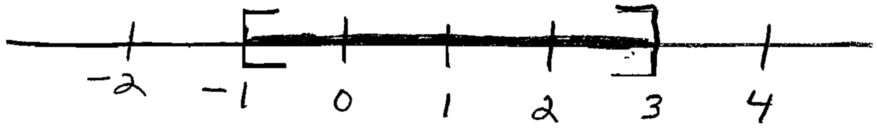
(9-155A, B)

421) Which is a picture of $(-1,3]$?

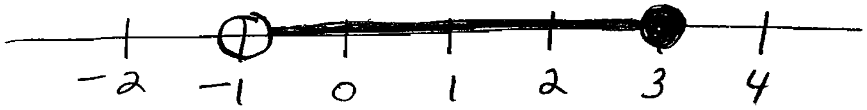
A)



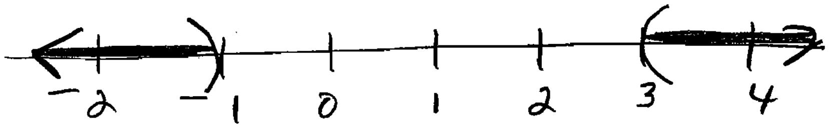
B)



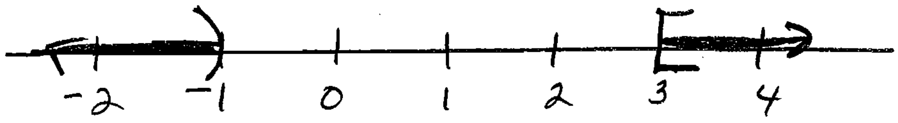
C)



D)



E)



F) None of A), B), C), D), and E).

(9-156T)

(422) Given $A<B$. Which of the following is true?

G) $A+C>B+C$ when C is negative because you turn the inequality around.

H) For any real number C, $A+C<B+C$

J) None of G) and H).

(9-156T)

(423) Given $A<B$. Which of the following is true?

K) For any real number C, $A-C<B-C$.

L) $A-C>B-C$, when C is positive, making $-C$ negative, hence turn the inequality around.

M) None of K) and L).

(9-156M)

(424) Given $A<B$ and $C>0$. Which of the following is true?

N) $AC<BC$

O) $AC>BC$ because you need to turn the inequality around.

P) None of N) and O).

(9-156M)

(425) Given $A<B$ and $C<0$. Which of the following is true?

Q) $AC < BC$

R) $AC > BC$ because you need to turn the inequality around.

S) None of Q) and R).

(9-156B)

(426) Solve (= name the solution set) $3x>6$

T) $(-\infty,2)$

U) $(2,\infty)$

W) $\{x \mid x<2\}$

X) None of T), U), and W).

(9-157T)

(427) Solve (= name the solution set) $-4x>12$

A) $(-\infty,-3)$

B) $(-3,\infty)$

C) $(3,\infty)$

D) $\{x \mid x>3\}$

E) None of A), B), C), and D).

(9-157B)

(428) In the solving process for $\frac{1}{6}x - 2 \geq \frac{1}{2}x + 4$, 2 is added to both sides and $\frac{1}{2}x$ is subtracted from both sides. After simplifying, the result is

F) $-\frac{1}{3}x \geq 2$

G) $\frac{2}{3}x \geq 6$

H) $-\frac{1}{3}x \geq 6$

J) $\frac{1}{3}x \geq 6$

K) None of F), G), H), and J).

(9-157B)

(429) The solution set for $\frac{1}{6}x - 2 \geq \frac{1}{2}x + 4$ is

L) $[-2, \infty)$

M) $[-18, \infty)$

O) $(-\infty, -2]$

P) $(-\infty, -18]$

R) None of L), M), O), and P)

(430) $-3 < 2 - \frac{3}{4}x < 5$ means which of the following:

S) $-3 < 2 - \frac{3}{4}x$ OR $2 - \frac{3}{4}x < 5$

T) $-3 < \left(2 - \frac{3}{4}\right)x < 5$

U) $-3 < 2 - \frac{3}{4}x$ AND $2 - \frac{3}{4}x < 5$

W) None of S), T), and U).

(9-158 M)

(431) multiplying both sides of $-5 < -\frac{3}{4}x$ by $-\frac{4}{3}$ and simplifying some yields

A) $\frac{20}{3} > x$

B) $\frac{20}{3} < x$

C) $-\frac{19}{3} > x$

D) $-\frac{19}{3} < x$

E) None of A), B), C), and D).

(9-158 M)

(432) The solution set for $-4 < x < \frac{20}{3}$ is

F) $(-4, \infty) \cup (-\infty, \frac{20}{3})$

G) $(-4, \frac{20}{3})$

H) $(-\infty, -4) \cup (\frac{20}{3}, +\infty)$

J) None of F), G), and H).

(9-158B)

(433) Subtracting 2 all the way across $-3 < 2 - \frac{3}{4}x < 5$ yields

K) $-5 < -\frac{3}{4}x < 5$

L) $-5 < 4 - \frac{3}{4}x < 3$

M) $-5 < -\frac{3}{4}x < 3$

P) None of K), L), and M).

(9-158B)

(434) Given $-3 < 2 - \frac{3}{4}x < 5$. If you subtract 2 all the way across and the multiply by $-\frac{4}{3}$ all the way across you get

Q) $\frac{20}{3} > x > -4$

R) $\frac{20}{3} < x < -4$

S) $\frac{20}{3} > x > \frac{-20}{3}$

T) None of Q), R), and S).

(9-159T)

(435) The solution set for $3 + 2x > 9$ OR $3 + 2x < -9$ is

U) $(-6, 3)$

W) $(-6, \infty) \cup (-\infty, 3)$

X) $(-\infty, -6) \cup (3, \infty)$

Z) None of U), W), and X).

(9-159B)

(436) True or False: $x > 3$ OR $x < -6$ can be written $3 < x < -6$.

T) True

F) False

(9-159T)

(437) Suppose you have $x > 3$ OR $x < -6$. Which is the exactly correct terminology for the solution set?

A) $(-\infty, -6)$ OR $(3, \infty)$

B) $(-\infty, -6)$ AND $(3, \infty)$

C) $(-\infty, -6) \cup (3, \infty)$

D) $(-6, 3)$

E) None of A), B), C), and D).

(9-161T)

(438) $(-5, 2) \cap (-1, 4] =$

F) $(-5, 4]$

G) ϕ

H) $(-1, 2)$

J) $(-1, 2]$

K) None of F), G), H), and J).

(9-161 M)

439 $(-5,2)\cup(-1,4] =$

L) $(2,-1)$
M) $(-5,4]$
O) $(-5,4)$
P) $(-1,2)$
R) None of L), M), O), and P).

(9-161 B)

440 $(3,5]\cap[5,7) =$

S) $(3,7)$
T) 5
U) $\{5\}$
W) ϕ
X) None of S), T), U), W), and X).

(9-161 B)

441 $(3,5]\cup[5,7) =$

A) $(3,7)$
B) $[3,7]$
C) ϕ
D) 5
E) $\{5\}$
F) None of A), B), C), D), and E).

(9-162 T)

(442) The proper removing of absolute values for $|x| < K$ is

G) $x < K$ OR $x > -K$

H) $x < -K$ OR $x > K$

J) $-K < x < K$

L) $x < K$

M) None of G), H), J), and L).

(9-162 T)

(443) $|x| < 3$ if and only if

N) $x < 3$

O) $-3 < x < 3$

P) $x < 3$ OR $x > -3$

R) $x < -3$ OR $x > 3$

S) None of N), O), P), and R).

(9-162 B)

(444) The solution set for $|2 - 3x| < 7$ is

T) $(-3, \frac{5}{3})$

U) $(-\infty, -\frac{5}{3}) \cup (3, \infty)$

W) $(-\frac{5}{3}, 3)$

X) $(-\frac{5}{3}, \infty)$

Z) None of T), U), W), and X).

(9-162 M)

(445) $|2-3x| < 7$ if and only if

A) $2-3x < 7$
B) $2-3x < 7$ OR $2-3x > -7$
C) $7 < 2-3x < -7$
D) $-7 < 2-3x < 7$
E) None of A), B), C), and D).

(9-162 M)

(446) Given $-7 < 2-3x < 7$. Subtract 2 all the way across. Divide by -3 all the way across and you get

F) $\frac{-9}{-3} > x > \frac{5}{-3}$
G) $\frac{-9}{-3} < x < \frac{5}{-3}$
H) $\frac{-9}{-3} > x > \frac{7}{-3}$
J) None of F), G), and H

(9-163)

(447) The solution set for $\left|\frac{3}{4} - \frac{2}{3}x\right| \le \frac{1}{5}$ is

K) $(-\infty, \frac{33}{40}] \cup [\frac{57}{40}, \infty)$
L) $[\frac{33}{40}, \frac{57}{40}]$
M) $(-\infty, \frac{57}{4}]$
P) $[\frac{57}{40}, \frac{33}{40}]$
Q) None of K), L), M), and P).

(9-163 T)

(448) $\left|\frac{3}{4} - \frac{2}{3}x\right| \le \frac{1}{5}$ if and only if

R) $\frac{3}{4} - \frac{2}{3}x \le \frac{1}{5}$

S) $\frac{3}{4} - \frac{2}{3}x \le \frac{1}{5}$ OR $\frac{3}{4} - \frac{2}{3}x \ge -\frac{1}{5}$

T) $-\frac{1}{5} \le \frac{3}{4} - \frac{2}{3}x \le \frac{1}{5}$

U) $\frac{1}{5} \le \frac{3}{4} - \frac{2}{3}x \le -\frac{1}{5}$

W) None of R), S), T), and U).

(9-163 M)

(449) Given $-\frac{1}{5} \le \frac{3}{4} - \frac{2}{3}x \le \frac{1}{5}$. Subtract $\frac{3}{4}$ all the way across. Multiply by $-\frac{3}{2}$ all the way across and you get

A) $-\frac{57}{40} \ge x \ge \frac{33}{40}$

B) $-\frac{57}{40} \ge x \ge -\frac{33}{40}$

C) $\frac{57}{40} \ge x \ge \frac{33}{40}$

D) $-\frac{57}{40} \le x \le -\frac{33}{40}$

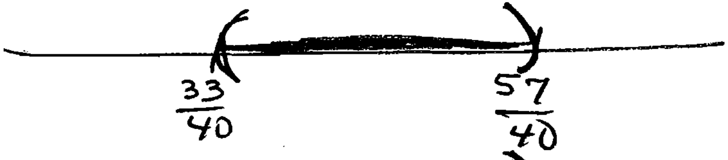
E) $\frac{57}{40} \le x \le \frac{33}{40}$

F) None of A), B), C), D), and E).

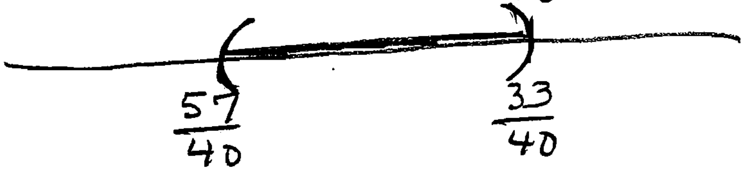
(9-163 B)

(450) What is the picture of the solution set for $\frac{33}{40} \leq x \leq \frac{57}{40}$?

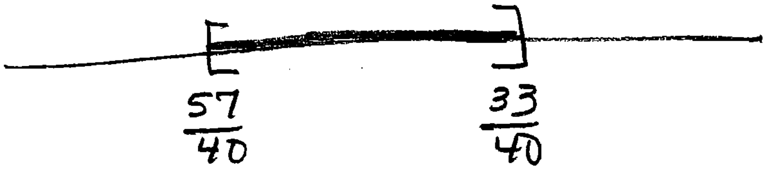
G)



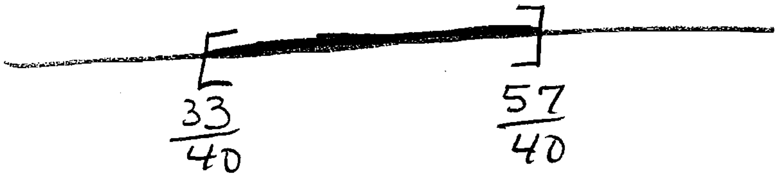
H)



J)



K)



L) None of G), H), J), and K).

(9-164T)

(451) $|x| > k$ if and only if

M) $x > k$ OR $x < -k$

O) $x > k$

P) $-k > x > k$

R) $x < k$ OR $x > -k$

S) None of M), O), P), and R).

(9-164 T)

(452) $|x| > 3$ if and only if

T) $x > 3$

U) $x < 3$ OR $x > -3$

W) $-3 > x > 3$

X) None of T), U), and W).

(9-164 M, B)

(453) The solution set for $|2-3x| > 7$ is

A) $(-\frac{5}{3}, 3)$

B) $[-\frac{5}{3}, 3]$

C) ϕ

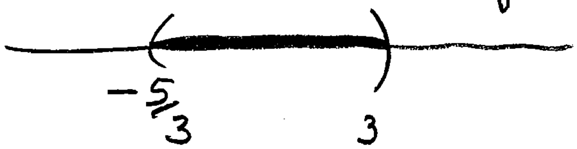
D) $(-\infty, -3) \cup (5/3, \infty)$

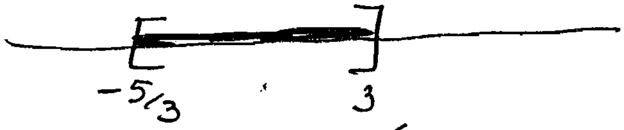
E) $(-\infty, -5/3) \cup (3, \infty)$

F) None of A), B), C), D), and E).

(9-164 B)

(454) Sketching the solution set for $x < -\frac{5}{3}$ OR $x > 3$ gives

G)


H)


J)


K) None of G), H) and J).

(9-165 T)

455 The solution set for $\left|\frac{3}{4}-\frac{2}{3}x\right| \geq \frac{1}{5}$ is

L) $\left(-\infty, \frac{57}{40}\right] \cup \left[\frac{33}{40}, \infty\right)$

M) $\left(-\infty, -\frac{57}{40}\right] \cup \left[-\frac{33}{40}, \infty\right)$

O) $\left[\frac{33}{40}, \frac{57}{40}\right]$

P) $\left[-\frac{57}{40}, -\frac{33}{40}\right]$

R) None of L), M), O), and P).

(9-165 T)

456 $\left|\frac{3}{4}-\frac{2}{3}x\right| \geq \frac{1}{5}$ if and only if

S) $-\frac{1}{5} \geq \frac{3}{4}-\frac{2}{3}x \geq \frac{1}{5}$

T) $\frac{3}{4}-\frac{2}{3}x \geq \frac{1}{5}$

U) $\frac{3}{4}-\frac{2}{3}x \geq -\frac{1}{5}$ OR $\frac{3}{4}-\frac{2}{3}x \leq \frac{1}{5}$

W) $\frac{3}{4}-\frac{2}{3}x \geq \frac{1}{5}$ OR $\frac{3}{4}-\frac{2}{3}x \leq -\frac{1}{5}$

X) None of S), T), U), and W).

(9-165B)

457 What do you multiply $-\frac{2}{3}x \geq -\frac{11}{20}$ by to yield $x \leq \frac{33}{20}$

A) $\frac{2}{3}$

B) $-2/3$

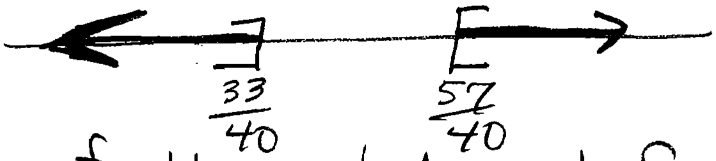
C) $3/2$

D) $-3/2$

E) None of A), B), C), and D).

(9-165B)

458



is a picture of the solution set for

F) $(-\infty, \frac{33}{40}] \cap [\frac{57}{40}, \infty)$

G) $[\frac{33}{40}, \frac{57}{40}]$

H) $[\frac{57}{40}, \frac{33}{40}]$

J) $(-\infty, \frac{33}{40}] \cup [\frac{57}{40}, \infty)$

K) None of F), G), H), and J).

(9-167, 168)

(459) $(x-3)(x-5) < 0$ if and only if

L) $x=3$ OR $x=5$

M) $x=-3$ OR $x=-5$

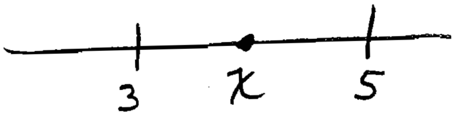
P) $x<3$ AND $x<5$

Q) $x<3$ OR $x<5$

R) None of L), M), P), and Q).

(9-168 T)

(460) Suppose $x \varepsilon (3,5)$



which of the following is <u>totally</u> true.

L = Left R = Right.

S) $\overset{\text{neg}}{\overset{L-R}{(x-3)}}\overset{\text{neg}}{\overset{L-R}{(x-5)}} > 0$

T) $\overset{\text{neg}}{\overset{L-R}{(x-3)}}\overset{\text{neg}}{\overset{L-R}{(x-5)}} < 0$

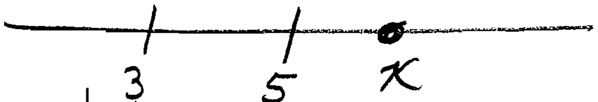
U) $\overset{\text{pos}}{\overset{R-L}{(x-3)}}\overset{\text{neg}}{\overset{L-R}{(x-5)}} < 0$

W) $\overset{\text{neg}}{\overset{R-L}{(x-3)}}\overset{\text{pos}}{\overset{L-R}{(x-5)}} < 0$

X) None of S), T), U), and W).

(9-168 M)

(461) Suppose $x \varepsilon (5, \infty)$



Which of the following is totally true?

L = Left R = Right

A) $\overset{\text{neg}}{\overset{L-R}{(x-3)}} \cdot \overset{\text{neg}}{\overset{L-R}{(x-5)}} > 0$

B) $\overset{\text{neg}}{\overset{R-L}{(x-3)}} \cdot \overset{\text{neg}}{\overset{R-L}{(x-5)}} > 0$

c) $\overset{\text{pos}}{\overset{R-L}{(x-3)}} \overset{\text{pos}}{\overset{R-L}{(x-5)}} > 0$

D) $\overset{\text{neg}}{\overset{L-R}{(x-3)}} \cdot \overset{\text{neg}}{\overset{L-R}{(x-5)}} < 0$

E) None of A), B), C), and D)

(9-167 T)

(462) The process taught to solve $x^2 < 8x - 15$ was to solve

F) $x^2 < 8(x-15)$

G) $0 < (x+3)(x+5)$

H) $(x+3)(x+5) < 0$

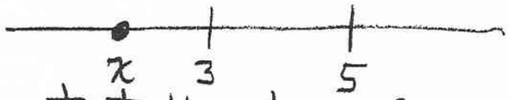
J) $(x-3)(x-5) < 0$

K) $(x-7)(x-8) < 0$

L) None of F), G), H), J), and K).

(9-167M)

(463) Suppose $x \in (-\infty, 3)$.



Which of the following is totally true?

M) $\overset{\text{neg}}{\overset{\text{L-R}}{(x-3)}} \cdot \overset{\text{neg}}{\overset{\text{L-R}}{(x-5)}} < 0$

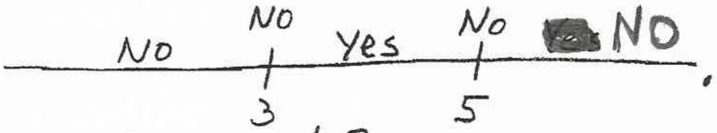
O) $\overset{\text{neg}}{\overset{\text{L-R}}{(x-3)}} \cdot \overset{\text{neg}}{\overset{\text{L-R}}{(x-5)}} > 0$

P) $\overset{\text{pos}}{\overset{\text{L-R}}{(x-3)}} \cdot \overset{\text{pos}}{\overset{\text{L-R}}{(x-5)}} > 0$

R) None of M), O), and P).

(9-168B)

(464) Suppose in the process of solving $(x-3)(x-5) < 0$ the results of the cases were



what is the solution set?

S) $(3,5)$

T) $[3,5]$

U) $(-\infty,3) \cup (5,\infty)$

W) $(-\infty,3) \cap (5,\infty)$

X) None of S), T), U), and W).

(9-169 T)

(465) Starting with $2x^3+3x^2 \geq 18x+27$, then subtracting $18x+27$ from both sides, then factoring somewhat yields

A) $(2x+3)(x^2+9)$

B) $(2x-3)(x^2-9)$

C) $(2x-3)(x^2-9)$

D) $(2x+3)(x^2-9)$

E) None of A), B), C), and D).

(9-169 M)

(466) Factoring $(2x+3)(x^2-9)$ further yields

F) $2(x+3)(x+3)(x-3)$

G) $2(x+\frac{3}{2})(x-3)(x-3)$

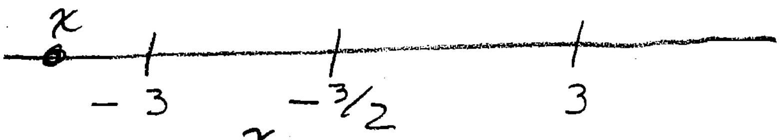
H) $2(x+\frac{3}{2})(x+3)(x-3)$

J) None of F), G), and H).

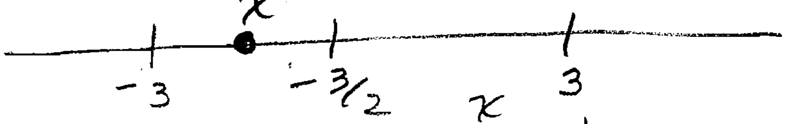
(9-169 B)

(467) Which is a picture of $x \in (-\infty,-3)$?

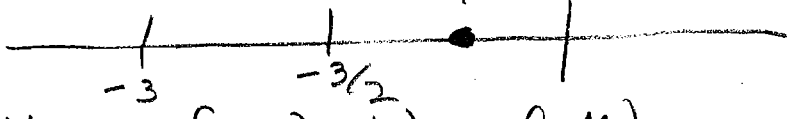
K)



L)



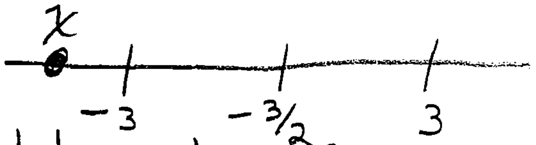
M)



P) None of K), L), and M).

(9-169 B)

468 Suppose $x \in (-\infty, -3)$.



Which of the following is totally true?

Q) $\overset{pos}{2} \cdot \overset{\substack{pos\\R-L}}{(x-[-3])} \cdot \overset{\substack{pos\\R-L}}{(x-[\frac{-3}{2}])} \cdot \overset{\substack{neg\\L-R}}{(x-3)} < 0$

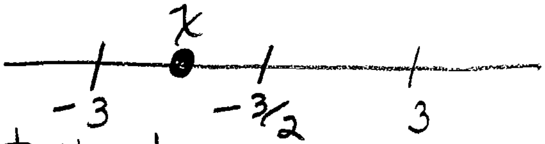
R) $\overset{pos}{2} \cdot \overset{\substack{neg\\L-R}}{(x-[-3])} \cdot \overset{\substack{neg\\L-R}}{(x-[-3/2])} \cdot \overset{\substack{neg\\L-R}}{(x-3)} < 0$

S) $\overset{pos}{2} \cdot \overset{\substack{neg\\L-R}}{(x-[-3])} \cdot \overset{\substack{neg\\L-R}}{(x-[-\frac{3}{2}])} \cdot \overset{\substack{neg\\L-R}}{(x-3)} > 0$

T) None of Q), R), and S).

(9-170T)

469 Suppose $x \in (-3, \frac{-3}{2})$.



Which of the following is totally true?

U) $\overset{pos}{2} \cdot \overset{\substack{neg\\L-R}}{(x-[-3])} \overset{\substack{neg\\L-R}}{(x-[\frac{-3}{2}])} \overset{\substack{neg\\L-R}}{(x-3)} < 0$

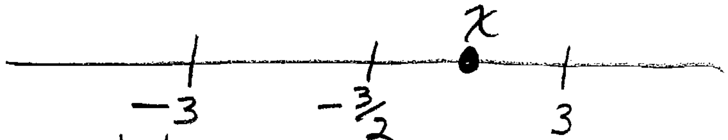
W) $\overset{pos}{2} \overset{\substack{neg\\L-R}}{(x-[-3])} \cdot \overset{\substack{neg\\L-R}}{(x-[\frac{-3}{2}])} \cdot \overset{\substack{pos\\R-L}}{(x-3)} > 0$

X) $\overset{pos}{2} \cdot \overset{\substack{pos\\R-L}}{(x-[-3])} \cdot \overset{\substack{neg\\L-R}}{(x-[\frac{-3}{2}])} \overset{\substack{neg\\L-R}}{(x-3)} > 0$

Z) None of U), W), and X

(9 - 170 T)

(470) Suppose $x \in (-\frac{3}{2}, 3)$.



Which of the following is totally true?

A) $\overset{\text{pos}}{2} \cdot (\overset{\substack{\text{pos}\\ \text{R-L}}}{x-[-3]}) \cdot (\overset{\substack{\text{pos}\\ \text{R-L}}}{x-[-\frac{3}{2}]})(\overset{\substack{\text{neg}\\ \text{L-R}}}{x-3}) < 0$

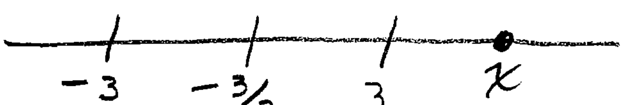
B) $\overset{\text{pos}}{2} \cdot (\overset{\substack{\text{neg}\\ \text{L-R}}}{x-[-3]}) \cdot (\overset{\substack{\text{pos}\\ \text{R-L}}}{x-[-\frac{3}{2}]}) \cdot (\overset{\substack{\text{pos}\\ \text{R-L}}}{x-3}) < 0$

C) $\overset{\text{pos}}{2} \cdot (\overset{\substack{\text{neg}\\ \text{L-R}}}{x-[-3]}) \cdot (\overset{\substack{\text{neg}\\ \text{L-R}}}{x-[-\frac{3}{2}]}) \cdot (\overset{\substack{\text{pos}\\ \text{R-L}}}{x-3}) > 0$

D) None of A), B), and C).

(9 - 170 M)

(471) Suppose $x \in (3, \infty)$.



Which of the following is totally true?

E) $\overset{\text{pos}}{2} \cdot (\overset{\substack{\text{neg}\\ \text{R-L}}}{x-[-3]}) \cdot (\overset{\substack{\text{neg}\\ \text{R-L}}}{x-[-\frac{3}{2}]}) \cdot (\overset{\substack{\text{neg}\\ \text{R-L}}}{x-3}) < 0$

F) $\overset{\text{pos}}{2} \cdot (\overset{\substack{\text{pos}\\ \text{R-L}}}{x-[-3]}) \cdot (\overset{\substack{\text{pos}\\ \text{R-L}}}{x-[-\frac{3}{2}]}) \cdot (\overset{\substack{\text{pos}\\ \text{R-L}}}{x-3}) < 0$

G) $\overset{\text{pos}}{2}(\overset{\substack{\text{pos}\\ \text{R-L}}}{x-[-3]}) \cdot (\overset{\substack{\text{pos}\\ \text{R-L}}}{x-[-\frac{3}{2}]}) \cdot (\overset{\substack{\text{pos}\\ \text{R-L}}}{x-3}) > 0$

H) None of E), F), and G).

(9-170 B)

(472) True or False: Suppose $x = -3$.
$2(x-[-3])(x-[-\frac{3}{2}])(x-3) \geq 0$

T) True

F) False

(9-170 B)

(473) Suppose $x = -\frac{3}{2}$

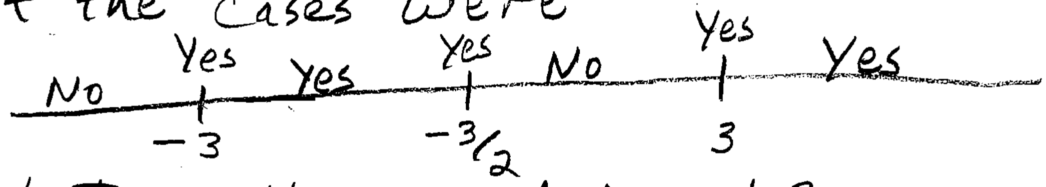
True or False: $2(x-[-3])(x-[-\frac{3}{2}])(x-3) \geq 0$

T) True

F) False

(9-171 T, M)

(474) Suppose in the process of solving $2(x-[-3])(x-[-\frac{3}{2}])(x-3) \geq 0$ the resuts of the cases were



What is the solution set?

J) $[-3, -\frac{3}{2}] \cap [3, \infty)$

K) $(-3, -\frac{3}{2}) \cup (3, \infty)$

L) $[-3, -\frac{3}{2}] \cup [3, \infty)$

M) None of J), K), and L).

(9-171B)

(475) To find all values for x so that $\sqrt{\dfrac{3x^2-4x-4}{x+1}} \geq 0$, one needs to solve

N) $3x^2-4x-4 \geq 0$ and $x+1 \geq 0$

O) $3x^2-4x-4 \geq 0$

P) $\dfrac{3x^2-4x-4}{x+1} \geq 0$

R) None of N), O), and P)

(9-171,172)

(476) In solving $\dfrac{3x^2-4x-4}{x+1} \geq 0$ marks were made on the number line at what places? The cases for the solving process were derived from these marks.

S) $2/3$, -2, 1

T) 2, -2, -1

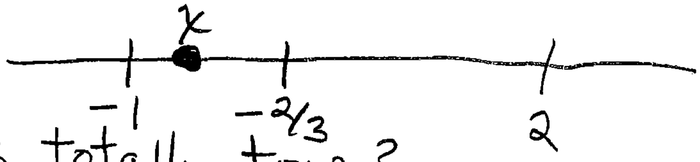
U) $-2/3$, -2, -1

W) $-2/3$, 2, -1

X) None of S), T), U), and W).

(9-173T)

477 Suppose $x \in (-1, -\frac{2}{3})$



which of the following is totally true?

A) $$\frac{\overset{\text{pos}}{3} \cdot \overset{\overset{\text{pos}}{L-R}}{\left(x-[-2/3]\right)} \cdot \overset{\overset{\text{pos}}{L-R}}{\left(x-2\right)}}{\underset{\underset{\text{neg}}{R-L}}{x-[-1]}} < 0$$

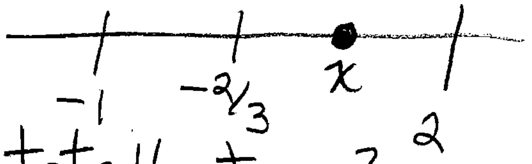
B) $$\frac{\overset{\text{pos.}}{3} \cdot \overset{\overset{\text{NEG}}{L-R}}{\left(x-[-2/3]\right)} \cdot \overset{\overset{\text{NEG}}{L-R}}{\left(x-2\right)}}{\underset{\underset{\text{pos}}{R-L}}{x-[-1]}} > 0$$

c) $$\frac{\overset{\text{pos}}{3} \cdot \overset{\overset{\text{neg}}{L-R}}{\left(x-[-2/3]\right)} \cdot \overset{\overset{\text{neg}}{L-R}}{\left(x-2\right)}}{\underset{\underset{\text{pos}}{R-L}}{x-[-1]}} < 0$$

D) None of these

(9-173M)

(478) Suppose $x \varepsilon (-\frac{2}{3}, 2)$.



Which of the following is totally true?

E) $$\frac{\overset{pos}{3}\left(\overset{\overset{neg}{R-L}}{x-[-\tfrac{2}{3}]}\right)\left(\overset{\overset{neg}{R-L}}{x-2}\right)}{\underset{\underset{pos}{L-R}}{x-[-1]}} > 0$$

F) $$\frac{\overset{pos}{3}\left(\overset{\overset{pos}{L-R}}{x-[-\tfrac{2}{3}]}\right)\left(\overset{\overset{neg}{R-L}}{x-2}\right)}{\underset{\underset{pos}{R-L}}{x-[-1]}} < 0$$

G) $$\frac{\overset{pos}{3}\left(\overset{\overset{neg}{R-L}}{x-[-\tfrac{2}{3}]}\right)\left(\overset{\overset{pos}{L-R}}{x-2}\right)}{\underset{\underset{neg}{L-R}}{x-[-1]}} > 0$$

H) None of E), F), and G).

(9-173 B)

(479) when $x = -1$, is $\frac{3\left(x-\left[\frac{-2}{3}\right]\right)(x-2)}{x-[-1]} \geq 0$?

Y) Yes

N) No

(9-174 T)

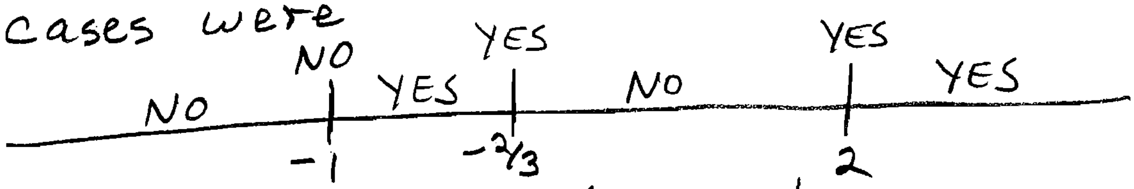
(480) when $x = \frac{-2}{3}$, is $\frac{3\left(x-\left[\frac{-2}{3}\right]\right)(x-2)}{x-[-1]} \geq 0$?

Y) Yes

N) No

(9-174 M)

(481) Suppose in the process of solving $\frac{3\left(x-\left[\frac{-2}{3}\right]\right)(x-2)}{x-[-1]} \geq 0$ the results of the cases were



what is the solution set?

N) $(-1, -2/3) \cap (2, \infty)$

θ) $[-1, -2/3] \cup [2, \infty)$

P) $(-1, -2/3] \cup [2, \infty)$

R) None of N), θ), and P).

(9-175T)

482 starting with $2x^3+3x^2 \geq 8x+12$, then subtracting $8x+12$ from both sides, then factoring somewhat yields

S) $(2x+3)(x^2-12)$
T) $(2x+3)(x^2+12)$
U) $(2x+3)(x^2-4)$
W) $(2x+3)(x^2+4)$
X) None of S), T), U), and W).

(9-175B, 9-176T)

483 In solving

$$2(x-[-\tfrac{3}{2}])(x-[-2])(x-2) \geq 0$$

by the <u>TEST</u> <u>POINT</u> <u>METHOD</u> an acceptable list of test points according to the text is

A) $-2, -\frac{3}{2}, 2, 3, \frac{7}{4}, 0$

B) $-2, -\frac{3}{2}, 2, -3, -\frac{7}{4}, 0, 3$

C) $-2, -\frac{3}{2}, 2, -3, 0, 3$

D) $-2, -\frac{3}{2}, 2, -\frac{3}{2}, -\frac{7}{4}, 0, \frac{3}{2}$

E) None of A), B), C), and D).

(9-175, 176)

(484) For $x = {}^{-}7/4$ is

$2(x-[-3/2])(x-[-2])(x-2) \geq 0$?

Y) Yes

N) No

(9-175, 176)

(485) For $x = 3$ is

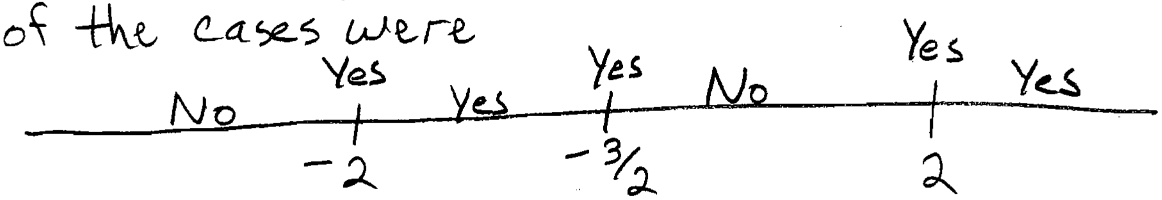
$2(x-[-3/2])(x-[-2])(x-2) \geq 0$?

Y) Yes

N) No

(9-175, 176)

(486) Suppose in the process of solving $2(x-[-3/2])(x-[-2])(x-2) \geq 0$ the results of the cases were



what is the solution set?

F) $(-2, -3/2] \cup (2, \infty)$

G) $[-2, -3/2] \cap [2, \infty)$

H) $[-2, -3/2] \cup [2, \infty)$

J) $(-2, -3/2) \cap (2, \infty)$

K) None of F), G), H), and J).

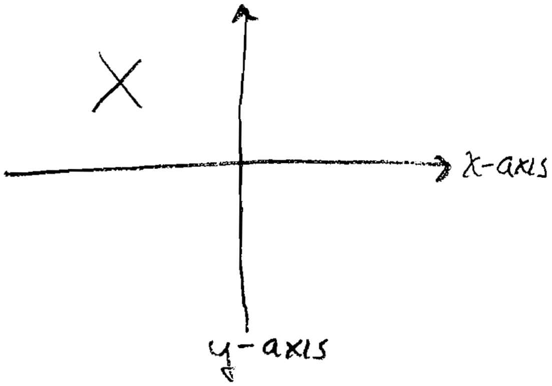
(10-178T)

487) Another name for the rectangular coordinate system is the

L) Pythagorean Coordinate System
M) Leibniz Coordinate System
Θ) Newton Coordinate System
P) Cartesian Coordinate System
R) None of L), M), Θ), and P).

(10-178T)

488) What quadrant has the X pictured at the right.



S) Quadrant I
T) Quadrant II
U) Quadrant III
W) Quadrant IV

(10-178B)

489) Another name for the first term of an ordered pair like (2,3), besides the x-coordinate, is

A) hypotenuse
B) ordinate
C) quadrant I
D) origin
E) None of A), B), C), and D).

(10-178B)

(490) Another name for the second term of an ordered pair like (2,3), besides y-coordinate, is

F) abscissa
G) hypotenuse
H) ordinate
J) origin
K) None of F), G), H), and J).

(10-178B)

(491) True or False for Ordered Pairs:

$$(2,3) \neq (3,2)$$

T) True
F) False

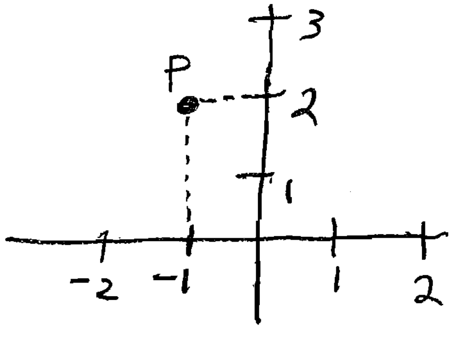
(10-179T)

(492) True or False: $\{2,3\} = \{3,2\}$

T) True
F) False

(10-179B)

(493) The point P pictured at the right is the point



L) (1,2)
M) (-1,2)
P) (-1,-2)
Q) None of L), M), and P)

(10-180T)

(494) The directed distance from a to b on a line is

R) $a-b$
S) $b-a$
T) $|a-b|$
U) $|b-a|$
W) None of R), S), T), and U).

(10-180M)

(495) The directed distance from 5 to -3 on the number line is

A) 8
B) -8
C) 2
D) -2
E) None of A), B), C), and D).

(10-180B)

(496) The distance (undirected) on a line from a to b is

F) $|a-b|$
G) $b-a$
H) $a-b$
J) $|a+b|$

K) None of F), G), H), and J).

(10-180B)

(497) The distance (undirected) from 5 to -3 on the number line is

L) 8
M) -8
O) 2
P) -2
R) None of L), M), O), and P).

(10-181M)

(498) The distance (undirected) between (x_1,y_1) and (x_2,y_2) in the plane is

S) $\frac{y_2-y_1}{x_2-x_1}$
T) $\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$
U) $\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$
W) $\sqrt{\left(\frac{x_2+x_1}{2}\right)^2+\left(\frac{y_2+y_1}{2}\right)^2}$
X) None of S), T), U), and W).

(10-181B)

(499) The distance in the plane between $(-3,2)$ and $(1,-4)$ is

A) $\frac{-4-2}{1-(-3)}$
B) 52
C) $\left(\frac{-3+1}{2}, \frac{2-4}{2}\right)$
D) None of A), B), and C)

(10-182B)

(500) The <u>midpoint</u> between a and b on a line is

E) $\frac{a-b}{2}$

F) $\frac{a+b}{2}$

G) $\sqrt{a^2+b^2}$

H) $b-a$

J) None of E), F), G), and H).

(10-182B)

(501) The midpoint between -3 and 5 on the number line is

K) 2

L) -1

M) 1

O) 4

P) None of K), L), M), and O).

(10-183M)

(502) The <u>midpoint</u> between (x_1, y_1) and (x_2, y_2) in the plane is

Q) $\frac{y_2-y_1}{x_2-x_1}$

R) $\left(\frac{x_1-x_2}{2}, \frac{y_1-y_2}{2}\right)$

S) $\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$

T) $\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$

U) None of Q), R), S), and T).

(10 - 183 M)

(503) What is the midpoint in the plane between $(-2,3)$ and $(4,-6)$?

A) $\frac{-6-3}{4-(-2)}$

B) $\sqrt{(4-(-2))^2+(-6-3)^2}$

C) $\left(\frac{-2+4}{2}, \frac{3-6}{2}\right)$

D) $\left(\frac{-2-4}{2}, \frac{3+6}{2}\right)$

E) None of A), B), C), and D).

(10 - 183 B)

(504) What is the midpoint in the plane between $(0,0)$ and (x,y).

F) $\left(\frac{x}{2}, \frac{y}{2}\right)$

G) $\frac{y-0}{x-0}$

H) $\left(\frac{-x}{2}, \frac{-y}{2}\right)$

J) None of F), G), and H)

(10 - 185 M)

(505) What is the slope between (x_1,y_1) and (x_2,y_2) in the plane?

K) $\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$

L) $\frac{y_2-y_1}{x_2-x_1}$

M) $\frac{y_2+y_1}{x_2+x_1}$

P) None of K), L), and M).

(10-185 B)

(506) What is the slope between $(-1,2)$ and $(3,-4)$ in the plane.

Q) $3/2$
R) $-3/2$
S) $2/3$
T) $-2/3$
U) None of Q), R), S), and T).

(10-186 M)

(507) The slope of a horizontal line is

A) undefined
B) 1
C) 0
D) None of A), B), and C).

(10-186 B)

(508) The slope of a vertical line is

E) undefined
F) 1
G) 0
H) None of E), F), and G).

(10 – 186 B)

(509) The slope of the line between (1, 1) and (1, 2) is

J) 0

K) $\left(\frac{1+1}{2}, \frac{1+2}{2}\right)$

L) 1

M) undefined

O) None of J), K), L), and M).

(10 – 187T)

(510) Parallel lines have

P) slopes that are the negative reciprocal of each other.

Q) slopes both equal to 1 always

R) the same slope

S) slopes that are the negative of each other.

T) None of P), Q), R), and S).

(10 – 187M)

(511) SLOPES OF <u>PERPENDICULAR</u> LINES ARE THE

U) SAME

W) RECIPROCAL OF EACH OTHER

X) THE NEGATIVE OF EACH OTHER

Z) NONE OF U), W), AND X)

(10-187 B)

(512) Suppose the given line has slope $-5/7$. The slope of the line perpendicular to it is

A) $-5/7$
B) $5/7$
C) $7/5$
D) $-7/5$
E) None of A), B), C), and D).

(10-187 B)

(513) The slope of the given line is -2. The slope of the line perpendicular to it is

F) -2
G) 2
H) $1/2$
J) $-1/2$
K) None of F), G), H), and J).

(10-187 B)

(514) The slope of the given line is 3. The slope of the line perpendicular to it is

L) 3
M) -3
θ) $1/3$
P) $-1/3$
R) None of L), M), θ), and P).

(10-188T)

(515) True or False: For a straight line with <u>positive</u> slope, as you go to the right you go uphill

T) True

F) False

(10-188B)

(516) True or False: For a straight line with <u>negative</u> slope, as you go to the right you go uphill.

T) True

F) False

(10-189T)

(517) A line goes through the point (1,2) with slope $\frac{3}{5}$. Another point on the line is $(6, q)$. What is q?

S) -1

T) 7

U) 5

W) None of S), T), and U).

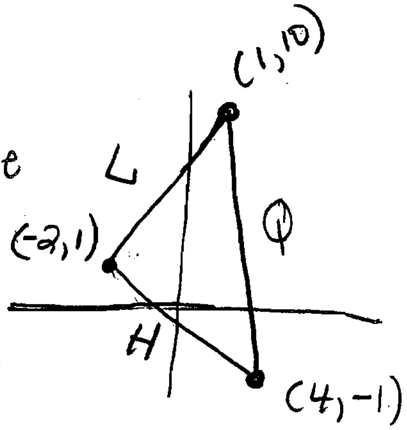
(10-189T)

518) A line goes through the point (1,2) with slope $\frac{3}{5}$. Another point on the line is (p, -1). What is p?

A) -4
B) 6
C) -2
D) None of A), B), and C).

(10-189B)

519) Consider the triangle at the right. A way to show the triangle is a right triangle is



E) to show Q = L+H.
F) to show the slope of L is the negative of the slope of H.
G) to show the slope of L equals the slope of H
H) to show the slope of L is the negative reciprocal of the slope of H.
J) None of E), F), G), and H).

(10-191M)

(520) The point-slope equation for a line through the point (x_1, y_1) with slope m is

K) $(x-x_1)=m(y-y_1)$
L) $(y+y_1)=m(x+x_1)$
m) $(y_1-x_1)=m(y-x)$
θ) $y-y_1=m(x-x_1)$
P) None of K), L), M), and θ).

(10-191B)

(521) An equation for the line through $(2,-3)$ with slope 5 is

Q) $y-2=5(x-(-3))$
R) $y-(-3)=5(x-2)$
S) $x-2=5(y-(-3))$
T) None of Q), R), and S).

(10-191B)

(522) The equation $y-(-3)=5(x-2)$ is an equation for the line with

A) slope 5 through $(3,-2)$
B) slope 5 through $(-2,3)$
C) slope 5 through $(2,-3)$
D) slope $\frac{1}{5}$ through $(2,-3)$
E) None of A), B), C), and D).

(10-192M)

(523) As defined in the text, standard form for an equation of a line is (with either $A \neq 0$ or $B \neq 0$)

F) $Ax + By = C$

G) $Ax + By + C = 0$

H) $y = mx + b$

J) $y - y_1 = m(x - x_1)$

K) None of F), G), H), and J).

(10-192T)

(524) Which equation below is in standard form for an equation for a line?

L) $y - (-3) = 5(x - 2)$

M) $y - (-3) = \frac{7-(-3)}{5-2}(x-2)$

θ) $y = -\frac{2}{3}x + 2$

P) $-5x + y + 13 = 0$

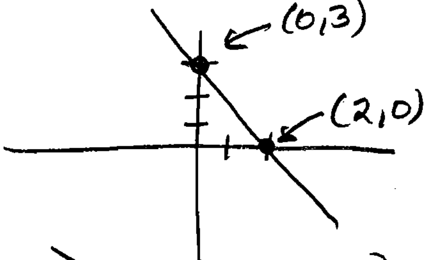
R) $\frac{y-(-3)}{x-2} = 5$

S) None of L), M), θ), P), and R).

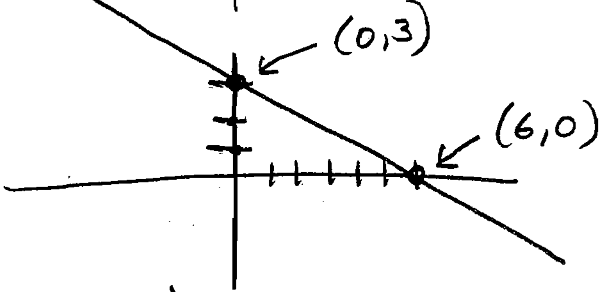
(10-193 m)

(525) Which of the following is the graph of $2x+3y=6$?

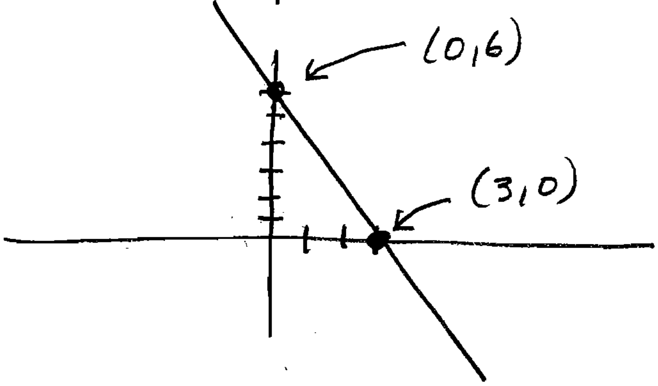
T)



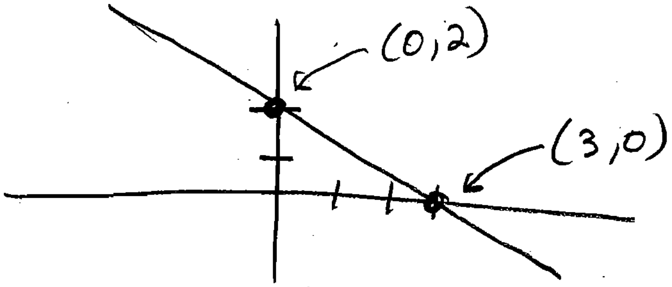
U)



W)

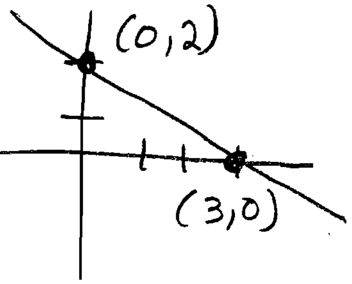


X)



Z) None of T), U), W), and X).

(10-193)



⑤②⑥ The graph at the right is the graph of

A) $3x+2y=0$

B) $3x+2y=\sqrt{3^2+2^2}$

C) $3x+2y=6$

D) $2x+3y=0$

E) $2x+3y=6$

F) None of A), B), C), D), and E).

(10-194T)

⑤②⑦ The 2-point equation for a line through (x_1,y_1) and (x_2,y_2) is

G) $y-y_1=\frac{x_2-x_1}{y_2-y_1}(x-x_1)$

H) $y-y_1=\frac{y_2-y_1}{x_2-x_1}(x-x_1)$

J) $y_2-y_1=m(x_2-x_1)$

K) $y_2-y_1=\frac{y-y_1}{x-x_1}(x_2-x_1)$

L) None of G), H), J), and K).

(10 - 194 M)

(528) The equation $y-(-3)=\frac{7-(-3)}{5-2}(x-2)$ is an equation for the line through

M) $(-3,2)$ and $(5,7)$

O) $(2,-3)$ and $(7,5)$

P) $(-3,2)$ and $(-5,-7)$

R) $(2,-3)$ and $(5,7)$

S) None of M), O), P), and R).

(10 - 194 B)

(529) The equation $y+3=\frac{10}{3}(x-2)$ put in standard form is

T) $\frac{10}{3}x+y=\frac{29}{3}$

U) $-\frac{10}{3}x+y=-\frac{29}{3}$

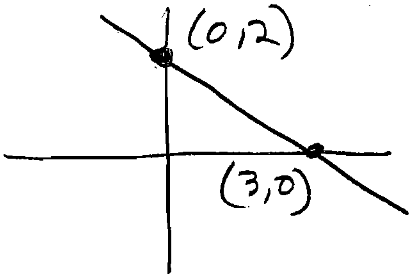
W) $-\frac{10}{3}x+y=\frac{29}{3}$

X) $\frac{10}{3}x+y=-\frac{29}{3}$

Z) None of T), U), W), and X).

(10-195T)

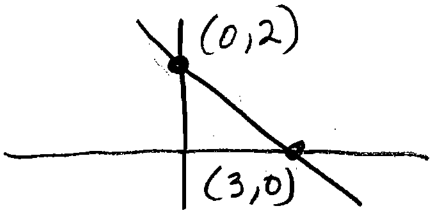
(530) what is the x-intercept for the graph at the right?



A) (0,2)
B) (3,0)

(10-195T)

(531) what is the y-intercept for the graph at the right?



A) (0,2)
B) (3,0)

(10-195 M)

(532) what is the x-intercept for $3x-4y=12$?

C) (12,0)
D) (4,0)
E) (0,4)
F) (0,-3)
G) (-3,0)
H) None of C), D), E), F), and G).

(10-195 B)

533 What is the y-intercept for $3x-4y=12$?

J) $(0,-3)$
K) $(-3,0)$
L) $(0,4)$
M) $(4,0)$
O) None of J), K), L), and M).

(10-195 M)

534 What is the slope-intercept equation for a line?

P) $y-y_1=m(x-x_1)$
Q) $y=mx+b$
R) $Ax+By+C=0$
S) $Ax+By=C$
T) None of P), Q), R), and S).

(10-195 B)

535 $2x+3y=6$ put in slope-intercept form is

U) $y=\frac{2}{3}x+2$
W) $y=\frac{-2}{3}x-2$
X) $y=-2/3x+2$
Z) None of U), W), and X).

(10-196B)

(536) What is the slope for $2x+3y=6$?

A) $\frac{3}{2}$

B) $2/3$

C) $-2/3$

D) $-3/2$

E) None of A), B), C), and D).

(10-196B)

(537) What is the y-intercept for $y=\frac{-2}{3}x+2$?

A) $(0,2)$

B) $(2,0)$

C) $(-\frac{2}{3},0)$

D) $(0,-2/3)$

E) None of A), B), C), and D).

(10-197T)

(538) What is the slope of the line perpendicular to $4x+3y=12$?

F) $-4/3$

G) $4/3$

H) $-3/4$

J) $\frac{3}{4}$

K) None of F), G), H), and J).

(10 − 197T)

(539) What is an equation for the line perpendicular to $4x+3y=12$ that passes through $(-2,5)$?

L) $y-2=-\frac{4}{3}(x-5)$
M) $y-5=-\frac{4}{3}(x-(-2))$
O) $y-5=\frac{3}{4}(x-(-2))$
P) $y-(-2)=\frac{3}{4}(x-5)$
R) None of L), M), O), and P)

(10 − 197 B)

(540) Putting $y-5=\frac{3}{4}x+\frac{6}{4}$ into standard form can give

S) $-\frac{3}{4}x+y=\frac{13}{2}$
T) $-\frac{3}{4}x+y=\frac{11}{4}$
U) $-\frac{3}{4}x+y=-\frac{13}{2}$
W) None of S), T), and U).

(10 − 198 T)

(541) A form for a horizontal line equation is

A) $x=K$
B) $y=b$
C) $x=0$
D) None of A), B), and C).

(10 – 198 M)

(542) An equation for the horizontal line through (2,3) is

E) $x=2$
F) $x=3$
G) $y=2$
H) $y=3$
J) None of E), F), G), and H)

(10 – 198 B)

(543) A form for a vertical line equation is

K) $x=k$
L) $y=b$
M) $y=0$
θ) None of K), L), and M).

(10 – 199 T)

(544) An equation for the vertical line through (2,3) is .

P) $x=2$
Q) $x=3$
R) $y=2$
S) $y=3$
T) None of P), Q), R), and S).

(10-199 B)

(545) The equation $0x+1y=3$ is standard form for

U) a vertical line through (2,3)
W) a horizontal line through (2,3)
X) a vertical line through (1,3)
Z) None of U), W), and X).

(10-199 B)

(546) The equation $1x+0y=2$ is standard form for

A) a vertical line through (2,3)
B) a horizontal line through (1,2)
C) a vertical line through (1,2)
D) None of A), B), and C).

(10-201 M)

(547) Standard form for an equation for a circle with center (h,k) and radius r is

E) $(x-k)^2+(y-h)^2=r$
F) $(x-h)^2+(y-k)^2=r^2$
G) $(x-h)^2+(y-k)^2=\sqrt{r}$
H) $(x-k)^2+(y-h)^2=r^2$
J) None of E), F), G), and H).

(11-201B)

(548) State the center and radius of the circle $(x-2)^2+(y+3)^2=4$

K) center $(2,-3)$ and radius 4

L) center $(-2,3)$ and radius 4

M) center $(2,-3)$ and radius 2

O) center $(-2,3)$ and radius 2

P) None of K), L), M), and O).

(11-201B)

(549) Give an equation for the circle with center $(2,-3)$ and radius 2.

Q) $(x-2)^2+(y+3)^2=4$

R) $(x-2)^2+(y+3)^2=2$

S) $(x+2)^2+(y-3)^2=4$

T) $(x+2)^2+(y-3)^2=2$

U) None of Q), R), S), and T).

(11-202T)

(550) An equation for the circle with center $(0,0)$ an radius 3 is

A) $x^2+y^2=3$

B) $x^2+y^2=9$

C) $x+y=3$

D) $x+y=9$

E) None of A), B), C), and D).

(11- 202M)

(551) Beginning steps for putting $2x^2+2y^2-12x+20y-30=0$ in standard form are

$$x^2+y^2-6x+10y-15=0$$

$$(x^2-6x \qquad)+(y^2+10y \qquad)=15$$

Which is a correct next step?

F) $(x^2-6x+36)+(y^2+10y+100) = 15$

G) $(x^2-6x+9)+(y^2+10y+25) = 15$

H) $(x^2-6x-9)+(y^2+10y+25) = 15+9+25$

J) $(x^2-6x+9)+(y^2+10y+25) = 15+9+25$

K) None of F), G), H), and J).

(11-202B)

(552) Which of the following follows from $(x^2-6x+9)+(y^2+10y+25)=15+9+25$?

L) $(x-3)^2+(y+5)^2=49$

M) $(x+3)^2+(y+5)^2=7$

O) $(x-9)^2+(y+25)^2=49$

P) $(x-6)^2+(y+10)^2=49$

R) None of L), M), O), and P).

(11-202B, 203T)

(553) Suppose $(x-3)^2+(y+5)^2=49$. What is the center and radius?

S) center $(3,-5)$ and radius 49

T) center $(3,-5)$ and radius 7

U) center $(-3,5)$ and radius 49

W) center $(-3,5)$ and radius 7

X) None of S), T), U), and W).

(11-203M)

(554) Beginning steps for putting $3x^2+3y^2+5x-7y-9=0$ in standard form are

$$x^2+y^2+\frac{5}{3}x-\frac{7}{3}y-3=0$$

$$\left(x^2+\frac{5}{3}x\qquad\right)+\left(y^2-\frac{7}{3}y\qquad\right)=3.$$

What is a correct next step?

A) $\left(x^2+\frac{5}{3}x+\frac{25}{9}\right)+\left(y^2-\frac{7}{3}y+\frac{49}{9}\right)=3$

B) $\left(x^2+\frac{5}{3}x+\frac{25}{9}\right)+\left(y^2-\frac{7}{3}y+\frac{49}{9}\right)=3+\frac{25}{9}-\frac{49}{9}$

C) $\left(x^2+\frac{5}{3}x+\frac{25}{36}\right)+\left(y^2-\frac{7}{3}y+\frac{49}{36}\right)=\frac{108}{36}+\frac{25}{36}+\frac{49}{36}$

D) $\left(x^2+\frac{5}{3}x+\frac{25}{36}\right)+\left(y^2-\frac{7}{3}y+\frac{49}{36}\right)=\frac{108}{36}+\frac{25}{36}-\frac{49}{36}$

E) None of A), B), C), and D)

(11-203 M,B)

(555) What needs to be added to $x^2+\frac{5}{3}x$ to make it a perfect square?

F) $\frac{25}{9}$

G) $\frac{25}{36}$

H) $\frac{100}{9}$

J) None of F), G), and H).

(11-203 M,B)

(556) What needs to be added to $y^2-\frac{7}{3}y$ to make it a perfect square?

K) $-\frac{49}{36}$

L) $\frac{49}{36}$

M) $-\frac{49}{9}$

O) $\frac{49}{9}$

P) None of K), L), M), and O).

(11-203 B)

(557) $y^2-\frac{7}{3}y+\frac{49}{36}=$

Q) $(y-\frac{7}{6})^2$

R) $(y-7/3)^2$

S) $(y+\frac{7}{6})^2$

T) None of Q), R), and S).

(11- 203 B)

558 $x^2 + \frac{5}{3}x + \frac{25}{36} =$

u) $(x + \frac{5}{3})^2$
w) $(x - \frac{5}{3})^2$
x) $(x + \frac{5}{6})^2$
z) None of u), w), and x).

(11- 203 B, 204T)

559 What is the radius for the circle $(x + \frac{5}{6})^2 + (y - \frac{7}{6})^2 = \frac{182}{36}$

A) $\frac{182}{36}$
B) $\frac{\sqrt{182}}{6}$
C) $\frac{182}{6}$
D) None of A), B), and C)

(11- 204 M)

560 What is the graph of $(x-1)^2 + (y-3)^2 = 0$.

E) A point
F) A circle
G) No graph
H) A line
J) None of E), F), G), and H).

(11-204T)

(561) What is the graph of
$(x-[-\frac{5}{6}])^2+(y-\frac{7}{6})^2=(\frac{\sqrt{182}}{6})^2$?

K) A point
L) A circle
M) No graph
Θ) None of K), L), and M).

(11-203T)

(562) What is the graph of $(x-3)^2+(y-[-5])^2=7^2$

P) A point
Q) A circle
R) No graph
S) A line
T) None of P), Q), R), and S).

(11-204M)

(563) Name a point on the graph of
$(x-1)^2+(y-3)^2=0$.

U) $(-1,-3)$
W) $(1,3)$
X) There are no points on the graph
Z) None of U), W), and X).

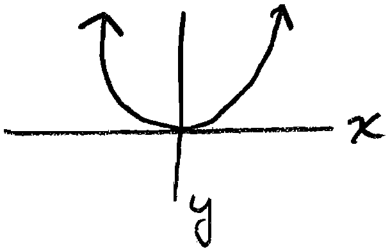
(11-204B)

(564) What is the graph of $(x-1)^2+(y-3)^2=-10$?

A) A point
B) A circle
C) No graph
D) A line
E) None of A), B), C), and D).

(11-206T)

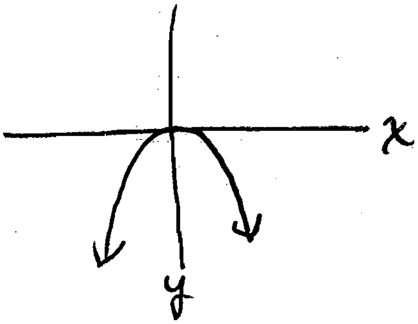
(565) Name an equation whose graph is the graph at the right.



F) $x=y^2$
G) $x=-y^2$
H) $y=x^2$
J) $y=-x^2$
K) None of F), G), H), and J).

(11-206M)

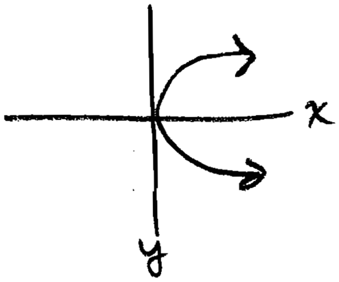
(566) Name an equation whose graph is the graph at the right.



L) $x=y^2$
M) $x=-y^2$
θ) $y=x^2$
P) $y=-x^2$
R) None of L), M), θ), and P).

(11-206B)

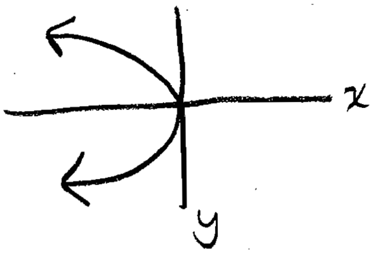
567) Name an equation whose graph is the graph at the right.



S) $x = y^2$
T) $x = -y^2$
U) $y = x^2$
W) $y = -x^2$
X) None of S), T), U), and W)

(11-206B)

568) Name an equation whose graph is the graph at the right.



A) $x = y^2$
B) $x = -y^2$
C) $y = x^2$
D) $y = -x^2$
E) None of A), B), C), and D).

(11-207B)

569) What is the vertex and axis of symmetry of $y = (x-1)^2 + 2$?

F) vertex is $(1, 2)$ and axis of symmetry is $y = 2$
G) Vertex is $(1, 2)$ and axis of symmetry is $x = 1$.
H) vertex is $(-1, 2)$ and axis of symmetry is $x = -1$.
J) vertex is $(-1, 2)$ and axis of symmetry is $y = -2$.

(11-208T)

(570) What is the vertex and axis of symmetry of $y=(x+2)^2+3$?

K) vertex (2,3) and axis of symm. is $x=2$
L) vertex (2,3) and axis of symm. is $y=3$
M) vertex (−2,3) and axis of symm. is $x=-2$
O) vertex (−2,3) and axis of symm. is $y=3$.
P) None of K), L), M), and O).

(11-208 M)

(571) What is the vertex and axis of symmetry of $y=-(x-1)^2+2$?

Q) vertex (−1,2) and axis of symm. is $x=-1$.
R) Vertex (−1,2) and axis of symm. is $y=2$
S) vertex (1,−2) and axis of symm. is $x=-2$
T) vertex (1,−2) and axis of symm. is $y=-2$
U) None of Q), R), S), and T).

(11-208 B)

(572) What is the vertex for $x=(y-1)^2+2$?

A) (2,1)
B) (1,2)
C) (−1,2)
D) (2,−1)
E) None of A), B), C), and D).

(11-208B)

(573) What is the axis of symmetry for $x=(y-1)^2+2$?

F) $y=2$
G) $x=2$
H) $y=1$
J) $y=-1$
K) $y=2$
L) None of F), G), H), J), and K).

(11-209T)

(574) What is the vertex for $x=(y+3)^2+2$?

M) $(-3,2)$
O) $(2,-3)$
P) $(3,2)$
Q) $(2,3)$
R) None of M), O), P), and Q).

(11-209T)

(575) What is the axis of symmetry for $x=(y+3)^2+2$?

S) $x=2$
T) $y=3$
U) $y=-3$
W) $x=-2$
X) None of S), T), U), and W).

(11-209 T)

(576) What is the vertex for $x=(y+1)^2-3$?

A) $(1,-3)$
B) $(-3,1)$
C) $(-1,3)$
D) $(-3,-1)$
E) None of A), B), C), and D).

(11-209 T)

(577) What is the axis of symmetry for $x=(y+1)^2-3$?

F) $x=-3$
G) $y=1$
H) $y=-3$
J) $x=1$
K) None of F), G), H), and J).

(11-209 M)

(578) What is the vertex for $x=-(y-1)^2+2$?

L) $(2,1)$
M) $(1,2)$
O) $(-1,2)$
P) $(2,-1)$
Q) None of L), M), O), and P).

(11-209M)

579 What is the axis of symmetry for $x = -(y-1)^2 + 2$?

R) $x = 2$
S) $y = 2$
T) $y = 1$
U) $y = -1$
W) None of R), S), T), and U).

(11-209B)

580 What is the vertex for $x = -(y-1)^2 - 2$?

A) $(-2, 1)$
B) $(1, -2)$
C) $(-2, -1)$
D) $(-1, -2)$
E) None of A), B), C), and D).

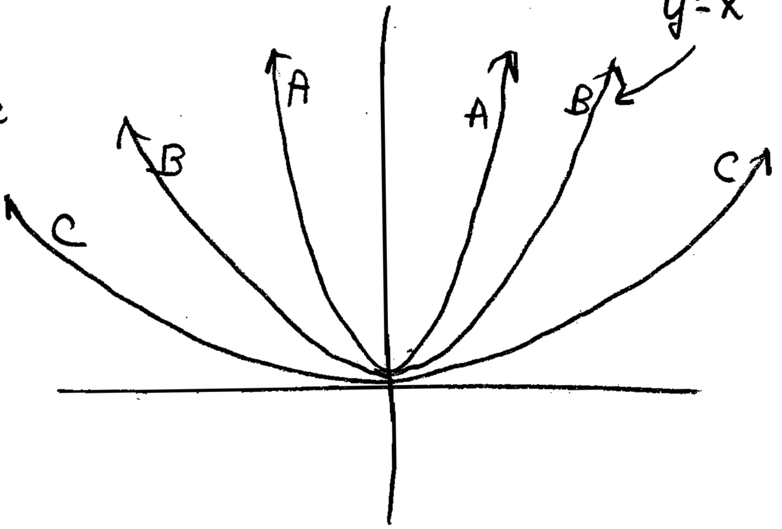
(11-209B)

581 What is the axis of symmetry for $x = -(y-1)^2 - 2$?

F) $x = -2$
G) $x = 1$
H) $y = 1$
J) $y = -2$
K) $y = -1$
L) None of F), G), H), J), and K).

(11-210M)

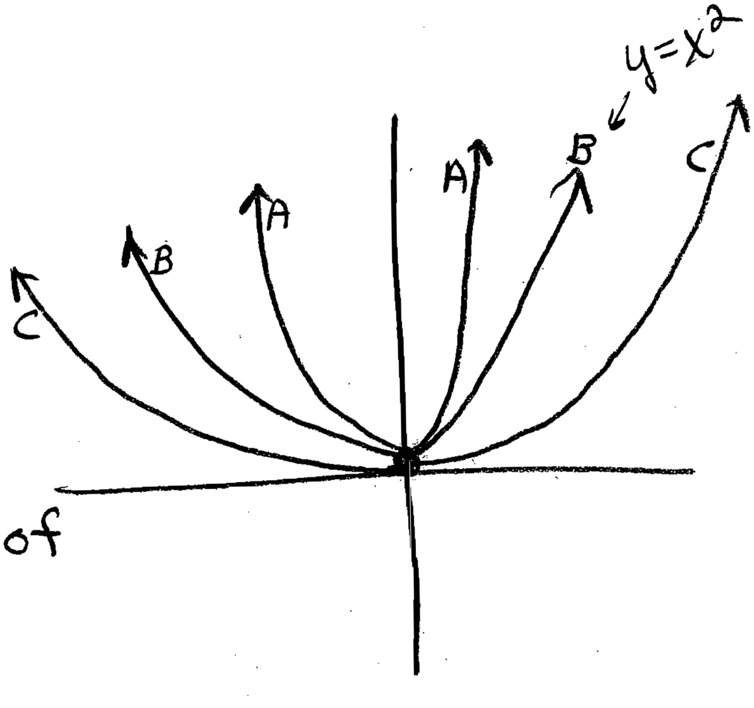
(582) At the right are 3 parabolas. Parabola B is the graph of $y=x^2$. Which is the graph of $y=\frac{1}{4}x^2$?



A) A
C) C

(11-210M)

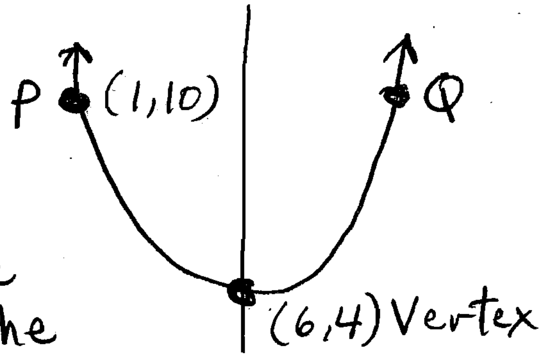
(583) At the right are 3 parabolas. Parabola B is the graph of $y=x^2$. Which is the graph of $y=4x^2$?



A) A
C) C

(11-211T)

⑸84 At the right is a parabola that opens up, with vertex (6,4). P(1,10) is a point on the parabola. What are the coordinates of the symmetric partner Q of P?



m) (5,10)
o) (6,10)
p) (11,10)
R) (9,10)
s) None of M), o), P), and R).

(11-211B)

(585) The graph of $y = 4x^2 - 16x + 13$ is a parabola that opens up with vertex (2,-3). Which is a pair of symmetric partners?

T) (0,13) and (2,13)
U) (0,13) and (-3,13)
W) (0,13) and (-6,13)
X) (0,13) and (4,13)
Z) None of T), U), W), and X).

(11-211B)

(586) The graph of $y = 4x^2 - 16x + 13$ is a parabola that opens up with vertex at $(2,-3)$. The point $(1,q)$ is on the parabola. The symmetric partner of $(1,q)$ is

A) (4, 13)
B) (1, 3)
C) (3, 1)
D) (1, 1)
E) (1, 2)
F) (2, 1)
G) None of A), B), C), D), E), and F).

(11-211B)

(587) The graph of $y = 4x^2 - 16x + 13$ is a parabola that opens up with vertex $(2,-3)$. $(4,13)$ is a point on the parabola. The symmetric partner of $(4,13)$ is

H) (2, 13)
J) (0, 13)
K) (4, 11)
L) (4, 9)
M) (−1, 13)
θ) None of H), J), K), L), and M).

(11-212T)

(588) Which of the following is standard form for a parabola that opens <u>up</u> with vertex (h,k)? $a>0$

P) $y = a(x-h)^2+k$
Q) $y = a(x-k)^2+h$
R) $x = a(y-k)^2+h$
S) $x = a(y-h)^2+k$
T) None of P), Q), R), and S).

(11-212T)

(589) Which of the following is standard form for a parabola that opens <u>left</u> with vertex (h,k)? $a<0$

U) $y = a(x-h)^2+k$
W) $y = a(x-k)^2+h$
X) $x = a(y-k)^2+h$
Y) $x = a(y-h)^2+k$
Z) None of U), W), X), and Y).

(11-212B)

(590) What is the vertex for $y = 4(x-2)^2-3$?

A) $(-2,3)$
B) $(2,-3)$
C) $(-3,2)$
D) $(3,-2)$
E) $(-2,-3)$
F) $(-3,-2)$
G) None of A), B), C), D), E), and F).

(11-212B)

(591) What is the axis of symmetry for $y = 4(x-2)^2 - 3$?

H) $x = -3$
J) $x = -2$
K) $x = 2$
L) $y = -3$
M) $y = -2$
θ) $y = 2$
P) None of H), J), K), L), M), or θ.

(11-212 M)

(592) Which way does the parabola $y = 4(x-2)^2 - 3$ open?

Q) up
R) down
S) right
T) left

(11-214T)

(593) Which way does the parabola $y = 3x^2 - 30x + 79$ open?

U) up
W) down
X) right
Z) left

(11-214T)

(594) To begin to put $y = 3x^2 - 30x + 79$ into standard form for a parabola, rewrite the equation to

$$y = 3(\_\_\_\_\_\_\_\_) + 79 .$$

The value inside the parentheses is

A) $x^2 - 30x$
B) $x^2 - 30x + \frac{79}{3}$
C) $x^2 - 10x$
D) $x^2 - 10$
E) None of A), B), C), and D).

(11-214 T, M)

(595) To put $y = 3x^2 - 30x + 79$ into standard form for a parabola, first factor

$$y = 3(x^2 - 10x \quad) + 79.$$

The next line is to complete the square properly. Which below is correct.

F) $y = 3(x^2 - 10x + 25) + 79$
G) $y = 3(x^2 - 10x + 25) + 75 + 79$
H) $y = 3(x^2 - 10x + 25) - 75 + 79$
J) $y = 3(x^2 - 10x - 25) - 75 + 79$
K) $y = 3(x^2 - 10x + 100) - 300 + 79$
L) None of F), G), H), J), and K).

(11-214)

596 Which way does the parabola $y = 3(x-5)^2 + 4$ open?

M) up
O) down
P) right
R) left

(11-214B)

597 What is the vertex for the parabola $y = 3(x-5)^2 + 4$?

S) (5, -4)
T) (5, 4)
U) (4, 5)
w) (-4, 5)
X) (-5, 4)
z) None of S), T), u), w), and X).

(11-214)

598 What is the vertex for the parabola $y = 3x^2 - 30x + 79$?

A) (1, 3)
B) (-30, 79)
C) (5, -4)
D) (-4, 5)
E) (4, 5)
F) (5, 4)
G) (-5, 4)
H) (4, -5)
J) None of A), B), C), D), E), F), G), and H).

(11-215T)

(599) What is the axis of symmetry for $y = 3(x-5)^2 + 4$

K) $x = 5$
L) $x = -5$
M) $y = 4$
θ) $y = 5$
P) None of K), L), M), and θ).

(11-215T)

(600) A pair of symmetric partners for $y = 3(x-5)^2 + 4$ is

Q) $(0,4)$ and $(10,4)$
R) $(0,79)$ and $(5,79)$
S) $(0,75)$ and $(5,75)$
T) $(0,79)$ and $(10,79)$
U) None of Q), R), S), and T).

(11-215B)

(601) To begin to put $x = -2y^2 - 12y - 17$ into standard form for a parabola, first factor to $x = -2(\_\_\_\_\_\_\_\_\_\_) - 17$. The value inside the parentheses is

A) $y^2 - 12y$
B) $y^2 - 6y$
C) $y^2 + 12y$
D) None of A), B), and C).

(11-215B, 216T)

(602) To put $x=-2y^2-12y-17$ into standard form for a parabola, first factor to get

$$x=-2(y^2+6y\qquad)-17.$$

A correct next step is

E) $x=-2(y^2+6y+36)-17$

F) $x=-2(y^2+6y+9)-9-17$

G) $x=-2(y^2+6y+9)-18-17$

H) $x=-2(y^2+6y+9)+18-17$

J) None of E), F), G), and H).

(11-216 M)

(603) What is the vertex for $x=-2(y+3)^2+1$?

K) $(3,1)$

L) $(1,3)$

M) $(-3,1)$

Θ) $(1,-3)$

P) None of K), L), M), and Θ).

(11-216 M)

(604) What is the axis of symmetry for

$$x=-2(y+3)^2+1$$

Q) $x=3$

R) $x=-3$

S) $y=3$

T) $y=-3$

U) $x=1$

W) None of Q), R), S), T), and U).

(11-216 M, B)

(605) The parabola $x = -2(y+3)^2 + 1$ opens

A) up
B) down
C) right
D) left

(11-216 B)

(606) For the parabola $x = -2y^2 - 12y - 17$, the vertex is $(1, -3)$ and a point on the parabola is $(-17, 0)$. Name the symmetric partner of $(-17, 0)$

E) $(-17, -6)$
F) $(-17, -3)$
G) $(19, 0)$
H) $(1, 0)$
J) None of E), F), G), and H).

(11-217 T)

(607) For the parabola $x = ay^2 + by + c$, with $a < 0$, the parabola opens

K) up
L) down
M) right
D) left

(11-217T)

608 For the parabola $y = ax^2 + bx + c$, with $a < 0$, the parabola opens

P) up

Q) down

R) right

S) left

(11-218T)

609 A function is a set of ordered pairs such that

T) no two ordered pairs have the same second term.

U) no two ordered pairs have the same first term.

W) each first term is a real number and each second term is a real number.

X) None of T), U), and W).

(11-218 T)

610 True or False: $g = \{(1,3), (2,3), (5,6)\}$ is a function.

T) True

F) False

(12-218T)

(611) True or False: $\{(1,3),(2,5),(4,7)\}$ is a function.

T) True

F) False

(12-218 B)

(612) True or False: $\{(1,5),(2,7),(1,8)\}$ is a function.

T) True

F) False

(12-218 B)

(613) True or False: $\{(A,3),(B,\{1,2\}),((2,3),\{5\})\}$ is a function.

T) True

F) False

(12-218 M)

(614) What can the blank $\{(1,5),(2,7),(\_,8)\}$ be filled in with so that the set is <u>not</u> a function.

A) 1

B) 3

C) 5

D) 7

E) None of A), B), C), and D).

(12-219T)

(615) The set of all first terms of a function f is

F) f(x)
G) the domain
H) the range
J) one-to-one
K) None of F), G), H), and J).

(12-219T)

(616) The set of all second terms of a function f is

L) f(x)
M) the domain
O) the range
P) one-to-one
R) None of L), M), O), and P)

(12-219T)

(617) which of the following functions has domain {1, 2, 4}?

S) {(1, 2), (4, 1)}
T) {(7, 1), (8, 2), (9, 4)}
U) {(2, 1), (4, 1)}
W) {(1, 3), (2, 5), (4, 7)}
X) None of S), T), U), and W).

(12-219T)

(618) Which of the functions below has range $\{3,5,7\}$?

A) $\{(1,3),(2,5),(4,7)\}$

B) $\{(3,5),(7,3)\}$

C) $\{(3,1),(5,2),(7,4)\}$

D) None of A), B), and C).

(12-219M)

(619) What is the domain of $\{(1,3),(2,3),(5,6)\}$?

E) $\{1,2,3,5,6\}$

F) $\{3,3,6\}$

G) $\{3,6\}$

H) $\{1,2,5\}$

J) None of E), F), G), and H).

(12-219B)

(620) What is the range of $\{(1,2),(5,2)\}$?

K) $\{1,5\}$

L) $\{1,2,5\}$

M) $\{2\}$

O) 2

P) None of K), L), M), and O)

(12-219B)

(621) What is the domain for $\{(A,3), (B,\{1,2\}), ((2,3), \{5\}\}$?

Q) $\{A, B, 2\}$

R) $\{A, B, (2,3)\}$

S) $\{3, \{1,2\}, \{5\}\}$

T) None of Q), R), and S)

(12-219B)

(622) What is the range for $\{(A,3), (B, \{1,2\}), (C, \{5\})\}$?

U) $\{3, 2, 5\}$

W) $\{3, 1, 2, \{5\}\}$

X) $\{3, \{1,2\}, 5\}$

Z) None of U), W), and X)?

(12-220M)

(623) Let $f = \{(1,3), (2,5), (4,7)\}$. $f(2) =$

A) 5

B) $\{5\}$

C) $(2,5)$

D) $\{2,5\}$

E) None of A), B), C), and D).

(12-220T)

(624) True or False: A function associates each element in the domain with <u>only</u> <u>one</u> element in the range.

T) True

F) False

(12-220T)

(625) Suppose f is a function and $f(1)=3$. Name an element of the function f.

F) $\{3\}$

G) $\{1\}$

H) $(1,3)$

J) $(3,1)$

K) None of F), G), H), and J).

(12-220M)

(626) Suppose f is a function and $(2,5) \in f$.

$f(2) =$

L) 5

M) $\{5\}$

O) $\{2,5\}$

P) $\{(2,5)\}$

R) None of L), M), O), and P).

(12-220 B)

(627) True or False: If g is a function and $g(1)=3$, then $(1,3) \varepsilon g$.

T) True

F) False

(12-221 M)

(628) Suppose $y=x^2$ defines a function named m. m =

S) $\{(x^2, x) \mid x$ is a real$\}$

T) $\{(x^2, y) \mid y=x^2\}$

U) $\{(y, x^2) \mid y=x^2\}$

W) $\{(x, y) \mid y=x^2\}$

X) None of S), T), U), and W).

(12-221 M)

(629) Suppose $y=x^2$ is an equation that defines the function $m = \{(x,y) \mid y=x^2\}$. Which of the following is an element of m?

A) (4, 2)

B) (4, -2)

C) (5, 10)

D) (1, -1)

E) None of A), B), C), and D).

(12-221B)

(630) Suppose $y=x^2$ defines a function m and x is associated with the first terms of m. $m(-2)=$

F) $\sqrt{-2}$
G) $-\sqrt{2}$
H) 4
J) -4
K) None of F), G), H), and J).

(12-221B)

(631) Suppose $y=x^2$ defines a function and x is associated with the first terms. Now x is called the

L) independent variable.
M) dependent variable.
O) ordinate
P) None of L), M), and O).

(12-221B)

(632) Suppose $y=x^2$ defines a function and y is associated with the second terms. Now y is called the

Q) independent variable
R) dependent variable
S) abscissa
T) None of Q), R), and S).

(12-222 T)

(633) For the function defined by $m(x)=x^2$,
$m(a+b) =$
A) a^2+b^2
B) $2a+2b$
C) $a^2-2ab+b^2$
D) $a^2+2ab+b^2$
E) None of A), B), C), and D).

(12-222T)

(634) For the function defined by $m(x)=x^2$,
$m(-2x+1) =$
F) $-4x^2+1$
G) $4x^2+1$
H) $-4x+2$
J) $4x^2+4x+1$
K) None of F), G), H), and J).

(12-222 B)

(635) For the function defined by
$p(x) = x^2+2x+1$, $p(a+b) =$
L) $a^2+b^2+2a+2b+1$
M) $a^2+2ab+b^2+2a+2b+1$
O) $a^2+2ab+b^2+2a+b+1$
P) $a^2+ab+b^2+a+b+1$
R) None of L), M), O), and P)

(12-222B)

636 For the function defined by $p(x)=x^2+2x+1$, $p(x+h)=$

S) $x^2+2xh+h^2+2x+2h+1$

T) $x^2+h^2+2x+2h+1$

U) $x^2+h^2+2x+h+1$

W) $x^2+2xh+h^2+2x+h+1$

X) None of S), T), U), and W).

(12-222 B)

637 For the function defined by $P(x)=x^2+2x+1$, which ordered pair is an element of p?

A) $(-2,0)$

B) $(-2,-1)$

C) $(-2,1)$

D) $(-2,9)$

E) None of A), B), C), and D).

(12-223M)

638 Suppose $3d+2t=7$ defines a function k, where t is the independent variable. $K(-4)=$

F) 5

G) $(-4,5)$

H) $-\frac{1}{3}$

J) $\frac{19}{2}$

K) $(-4,\frac{19}{2})$

L) None of F), G), H), J), and K).

(12-223B)

639) Suppose $3s+2t=7$ defines a function ℓ, where the independent variable is s. $\ell(5)=$

M) $(-4,5)$

θ) $(5,-4)$

P) -4

R) 5

S) None of M), θ), P), and R).

(12-224T)

640) True or False: The set of all ordered pairs (x,y) of reals that satisfies $x^2+y^2=1$ is a function.

T) True

F) False

(12-224M)

641) True or False: The set of all ordered pairs (y,x) of reals that satisfies $x^2+y^2=1$ is a function.

T) True

F) False

(12-225 T)

(642) True or False: $y=x^2$ defines a function when x is the independent variable.

T) True

F) False

(12-225 M)

(643) True or False: $y=x^2$ defines a function when y is associated with the first terms.

T) True

F) False

(12-225 B)

(644) For a graph, suppose the horizontal axis is associated with the first terms. The graph is the graph of a function if

T) No horizontal line intersects the graph twice.

U) No vertical line intersects the graph twice.

W) The graph does not intersect the line $y=x$ twice.

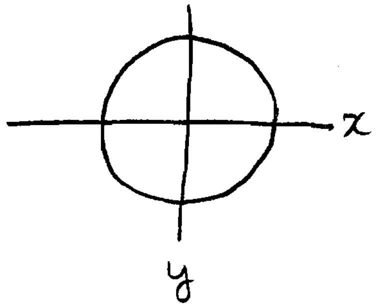
X) None of T), U), and W).

(12-226T)

645 Is the graph of $x^2+y^2=1$ shown at the right the graph of a function?

Y) Yes

N) No

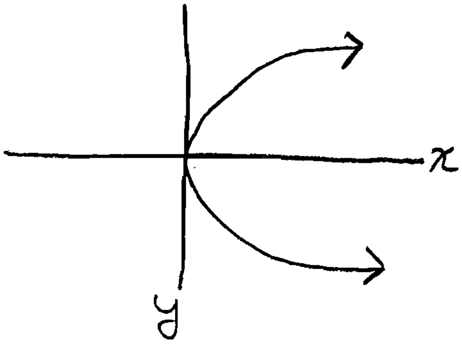


(12-226T)

646 Is the graph of $x=y^2$ shown at the right the graph of a function?

Y) Yes

N) No



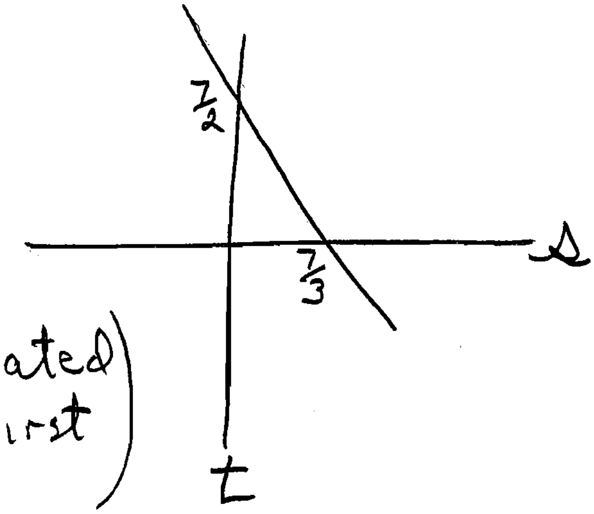
(12-226M)

647 Is the graph of $3s+2t=7$ shown at the right the graph of a function?

Y) Yes

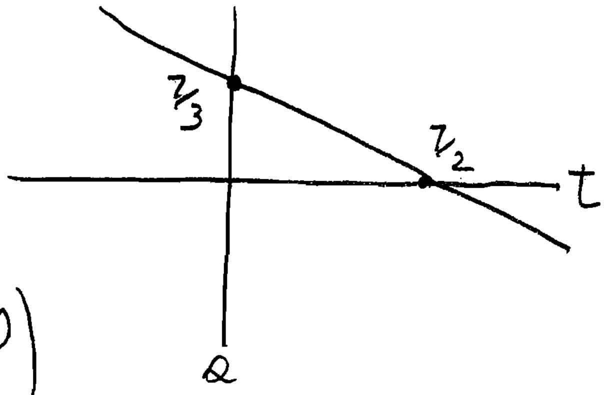
N) No

(s is associated with the first terms.)



(12-226B)

(648) Is the graph of $3s+2t=7$ shown at the right the graph of a function?



Y) Yes
N) No

(t is associated with the first terms.)

(12-229T)

(649) What is the understood domain for $f(x) = \frac{1}{(x-3)(x-4)}$?

A) $(-\infty,-4)\cup(-4,-3)\cup(-3,\infty)$
B) $(-\infty,-4)\cap(-4,-3)\cap(-3,\infty)$
C) $(-\infty,3)\cup(3,4)\cup(4,\infty)$
D) $(-\infty,3)\cap(3,4)\cap(4,\infty)$
E) None of A), B), C), and D).

(12-229B)

(650) What is the understood domain for $g(x) = \sqrt{3-2x}$?

F) $(-\infty,-\frac{2}{3}]$
G) $(-\infty,\frac{3}{2}]$
H) $(-\infty,\frac{2}{3}]$
J) $(-\infty,-\frac{3}{2}]$
K) $[\frac{2}{3},\infty)$
L) None of F), G), H), J), and K).

(12-230B)

(651) A way to look at a graph of a function and find its domain is to get all the

M) y-values where horizontal lines through those values intersect the graph.

O) x-values where vertical lines through those values intersect the graph.

P) (x,y) pairs of the points where $y=x$ intersects the graph.

R) None of M), O), and P).

(12-230B)

(652) A way to look at the graph of a function and find its range is to get all the

S) (x,y) pairs of the points where $y=x$ intersects the graph.

T) y-values where horizontal lines through those values intersect the graph

U) x-values where vertical lines through those values intersect the graph.

W) None of S), T), and U).

(12-231T)

(653) What is the domain for the function f at the right?

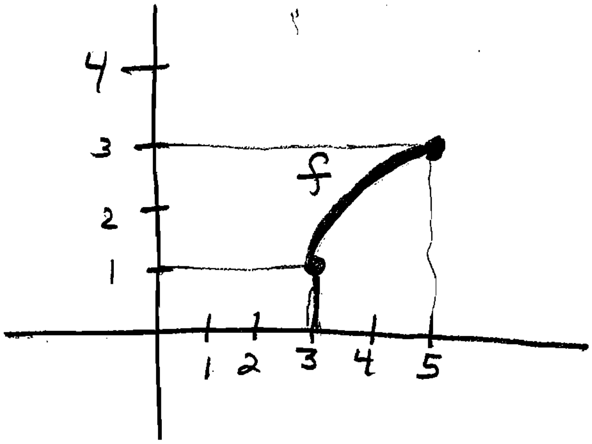
A) [3,5]

B) [1,3]

C) [1,5]

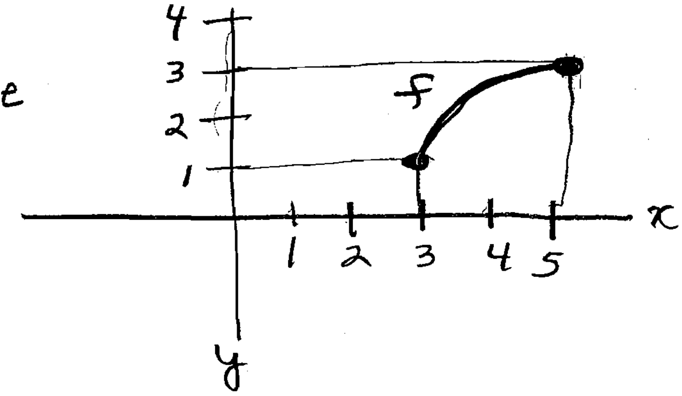
D) [0,5]

E) None of A), B), C), and D).



(12-231 T)

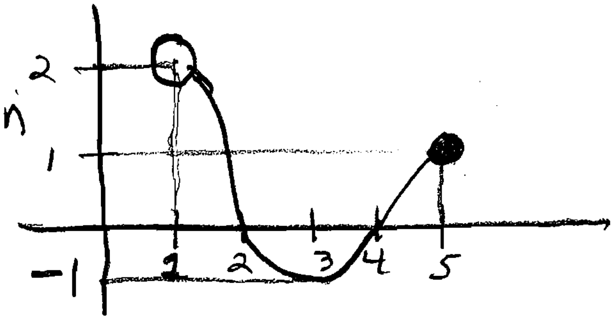
(654) What is the range of the function at the right?



F) [1,3]
G) [3,5]
H) [1,5]
J) [0,5]
K) None of F), G), H), and J).

(12-231 M)

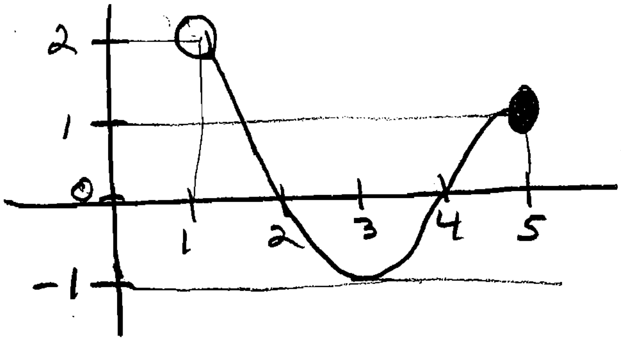
(655) What is the domain of the function at the right?



L) [-1,2)
M) [0,2)
O) (1,5]
P) (2,5]
R) None of L), M), O), and P).

(12-231 M)

(656) What is the range of the function at the right?



S) (2,5]
T) (1,5]
U) [-1,2)
W) [-1, 1]
X) [-1,5]

(12-232T)

(657) The range for $f(x) = x^2 - 4x + 7$ is (hint graph the function)

A) $(2,3)$

B) $[2,3]$

C) $[2,\infty)$

D) $[3,\infty)$

E) None of A), B), C), and D).

(12-232B)

(658) To find the range of $f(x) = x^2 - 4x + 7$ the algebraic steps

$$(x-2)^2 \geq 0$$

$$(x-2)^2 + 3 \geq 0 + 3$$

$$x^2 - 4x + 4 + 3 \geq 3$$

help reveal the range to be

F) $(-\infty, 3]$

G) $[7,\infty)$

H) $[3,\infty)$

J) $[0,\infty)$

K) None of F), G), H), and J).

(12-233T, M)

(659) To find the range of $f(x) = \frac{2x-1}{3x-2}$, set $y = f(x)$, solve for x, and see the range to be

L) $\{y \mid y \neq \frac{3}{2}\}$

M) $\{y \mid y \neq 1/2\}$

θ) $\{y \mid y \neq 2/3\}$

P) $\{y \mid y \neq 2\}$

R) None of L), M), θ), and P).

(12-233 T,M)

⑥⑥⓪ Let $y = \frac{2x-1}{3x-2}$. Solving for x gives $x=$

S) $\frac{2y+1}{3y-2}$

T) $\frac{2y-1}{3y+2}$

U) $\frac{2y-1}{3y-2}$

W) None of S), T), and U).

(12-236 T)

⑥⑥① $f(x) = 3x+1$ IF $x \geq 2$
$= -2x$ IF $x < 2$ $\quad f(3) =$

A) -6

B) 10

C) 7

D) None of A), B), and C).

(12-236 T)

⑥⑥② $f(x) = 3x+1$ IF $x \geq 2$
$= -2x$ IF $x < 2$ $\quad f(-4) =$

E) -11

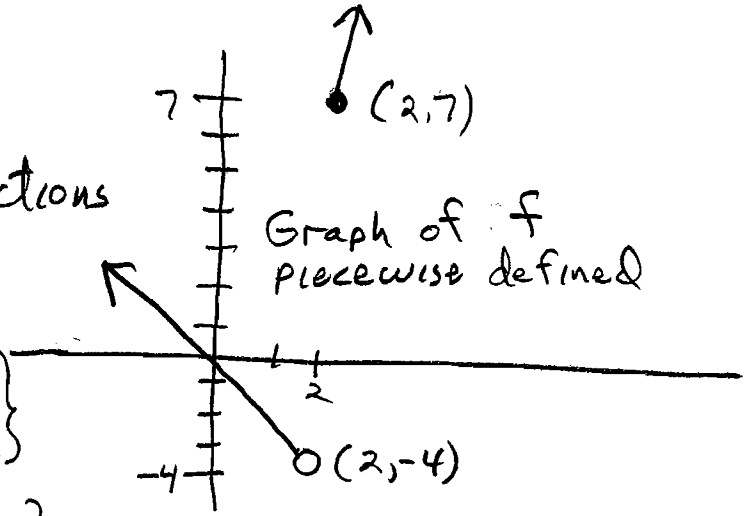
F) -13

G) -8

H) None of E), F), and G)

(12-236,237)

(663) Which of the functions defined below has the graph at the right



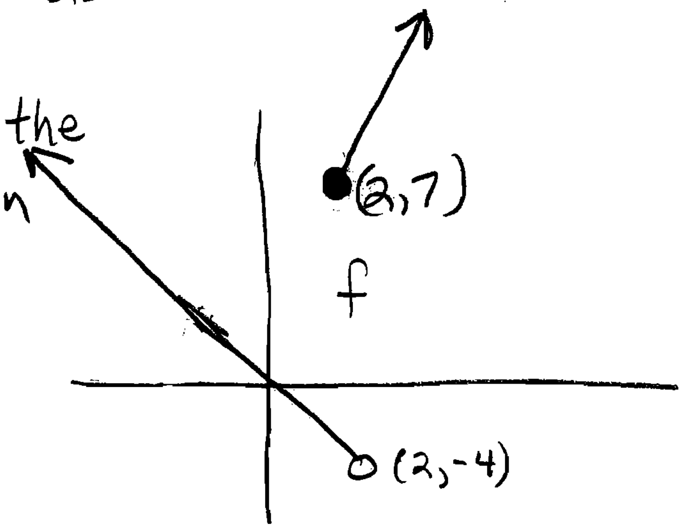
J) $\begin{cases} f(x) = x+5 & \text{IF } x \geq 2 \\ \quad = x-6 & \text{IF } x < 2 \end{cases}$

K) $\begin{cases} f(x) = 4x-1 & \text{IF } x \geq 2 \\ \quad = 2x-8 & \text{IF } x < 2 \end{cases}$

L) $\begin{cases} f(x) = 3x+1 & \text{IF } x \geq 2 \\ \quad = -2x & \text{IF } x < 2 \end{cases}$

(12-237B)

(664) At the right is the graph of a function f that was define piecewise.
What is the range of f?



M) $(-\infty,\infty)$

O) $(2,7)$

P) $(-4,\infty)$

R) $(-4,7]$

S) $(7,\infty)$

T) None of M), O), P), R), and S).

(12-238T)

(665) Piece-wise defined function f:

$$\begin{Bmatrix} f(x) = x & \text{if } x \geq 0 \\ \quad = -x & \text{if } x < 0 \end{Bmatrix} \qquad f(-2) =$$

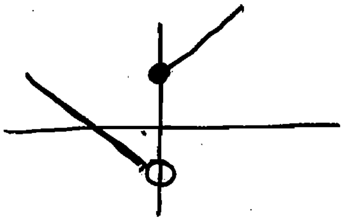
u) -2
w) 2
x) $-(-(-2))$
z) None of u), w), x), and z).

(12-238,239T)

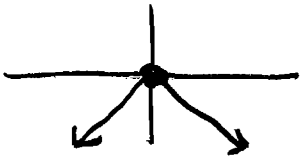
(666) which of the graps below is the graph of the piece-wise defined function f?

$$\begin{Bmatrix} f(x) = x & \text{if } x \geq 0 \\ \quad -x & \text{if } x < 0 \end{Bmatrix}$$

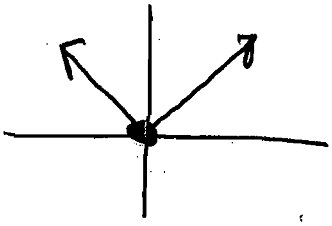
A)



B)



C)



(12-241T)

667 The graph of $y = -f(x)$ is the graph of $y = f(x)$ reflected about the

D) x-axis

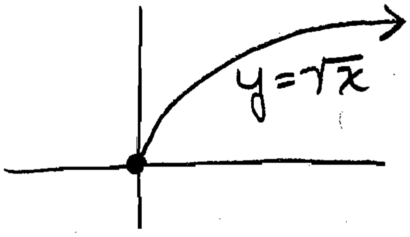
E) y-axis

F) the line $y = x$

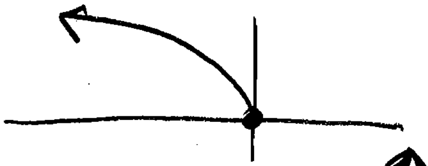
G) None of D), E), and F).

(12-241B)

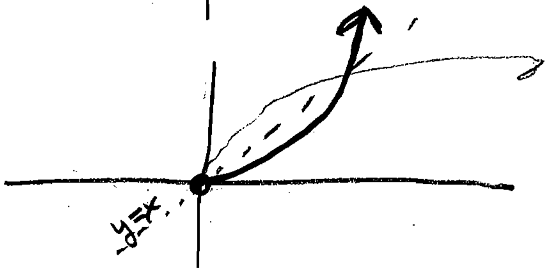
668 At the right is the graph of $y = \sqrt{x}$. Which of the graphs below is the graph of $y = -\sqrt{x}$?



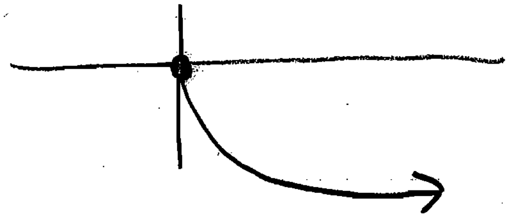
H)



I)



J)



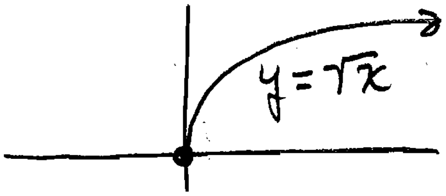
(12-242T)

(669) The graph of $y=f(-x)$ is the graph of $y=f(x)$ reflected about the

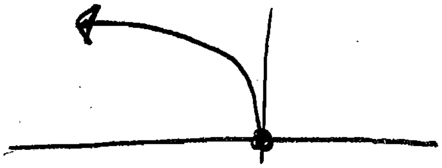
H) x-axis
J) y-axis
K) line $y=x$
L) None of H), J), and K).

(12-242T)

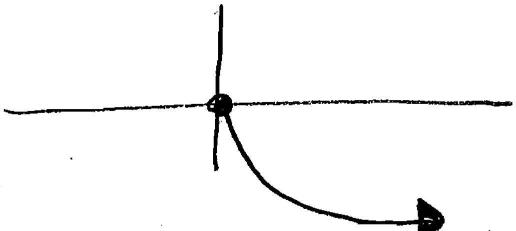
(670) At the right is the graph of $y=\sqrt{x}$. Which of the graphs below is the graph of $y=\sqrt{-x}$?



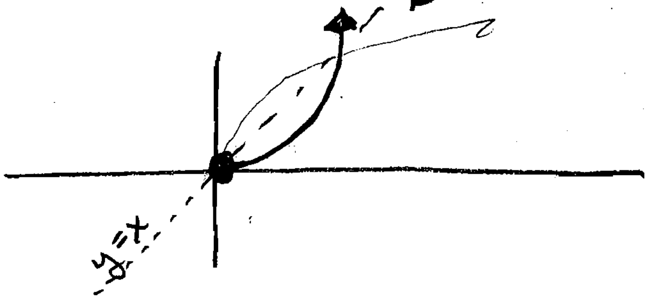
M)



Θ)



P)



(12-242B)

671 The graph of $y=\sqrt{x}$ is just the top half of the graph of

Q) $y=x^2$
R) $x=y^2$
S) $x^2+y^2=1$
T) $x^2=y^2$
U) None of Q), R), S), and T).

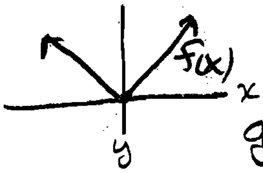
(12-243T)

672 The graph of $y=f(x)+2$ is the graph of $y=f(x)$

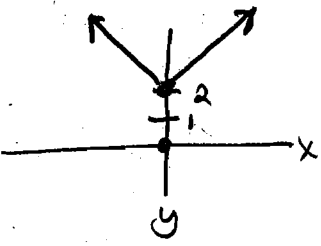
A) translated right 2
B) translated left 2
C) translated up 2
D) translated down 2
E) None of A), B), C), and D)

(12-243T)

673



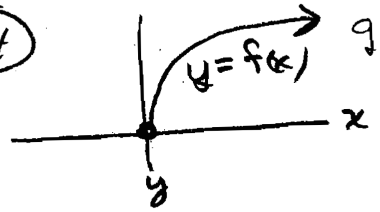
At the left is the graph of $y=f(x)$. At the right is the graph of

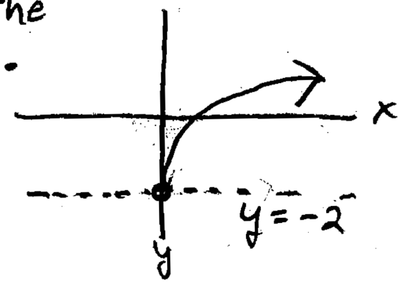


F) $y=f(x-2)$
G) $y=f(x+2)$
H) $y=f(x)+2$
J) $y=f(x)-2$
K) None of F), G), H), and J

(12-243B)

674 At the left is the graph of $y=f(x)$. At the right is the graph of





L) $y = f(x-2)$
M) $y = f(x) - 2$
θ) $y = f(x+2)$
P) $y = f(x) + 2$
R) None of L), M), θ), and P).

(12-244T)

675 $f(x) = 2x^2 - 3x + 4$. $f(x-h) =$

S) $2x^2 - 3x + 4 - h$
T) $2(x-h)^2 - 3x + 4$
U) $2(x-h)^2 - 3(x-h) + 4$
W) $(2x^2 - 3x + 4)(x-h)$
X) None of S), T), U), and W).

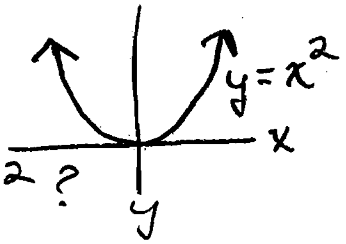
(12-244B)

676 $f(x-1) = 5(x-1)^3 - 2\sqrt{x-1} + 2(x-1)$, so $f(x) =$

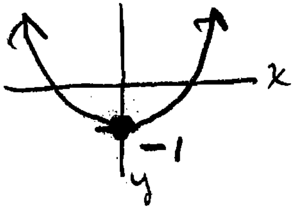
A) $5x^3 - 2\sqrt{x} + 2x$
B) $(5x)^2 - 2\sqrt{x} + 2$
C) $5x^3 - 5^3 - 2\sqrt{x} + 2\sqrt{1} + 2x - 2$
D) None of A), B), and C).

(12-244B)

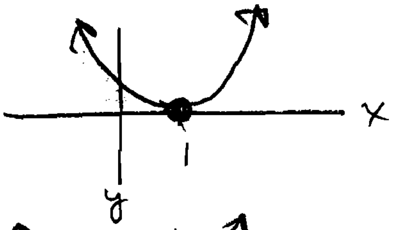
(677) At the right is the graph of $y=x^2$. Which of the graphs below is the graph of $y=(x-1)^2$?



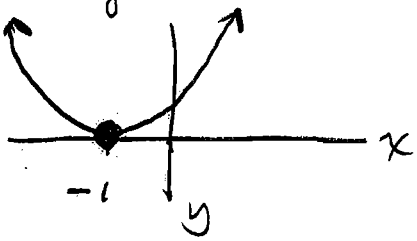
E)



F)



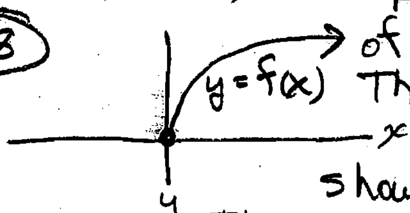
G)



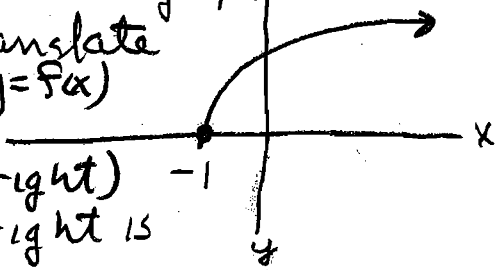
H) None of E), F), and G).

(12-245M)

(678)



At the left is the graph of $y=f(x)$. Translate the graph of $y=f(x)$ left 1 (as shown at the right) The graph at the right is the graph of

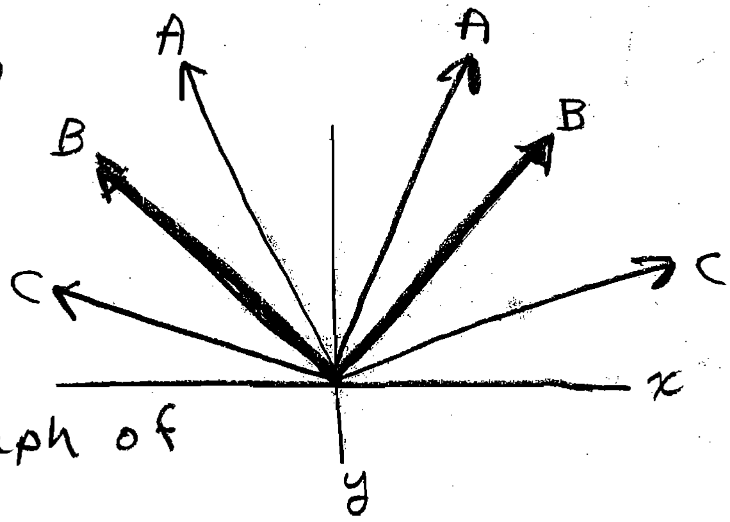


J) $y=f(x)-1$
K) $y=f(x-1)$
L) $y=f(x+1)$
M) None of J), K), and L).

(12-245B)

(679) At the right, B is the graph of $y=|x|$.
Which is the graph of $y=\frac{1}{4}|x|$?

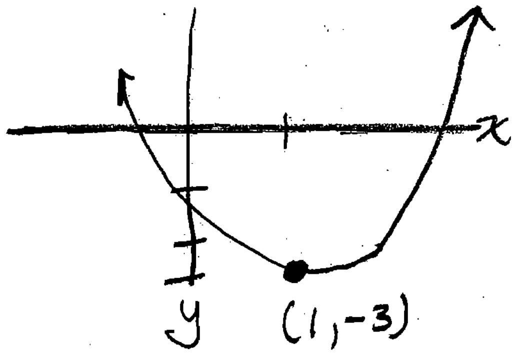
A) A
C) C



(12-246B)

(680) At the right is the graph of

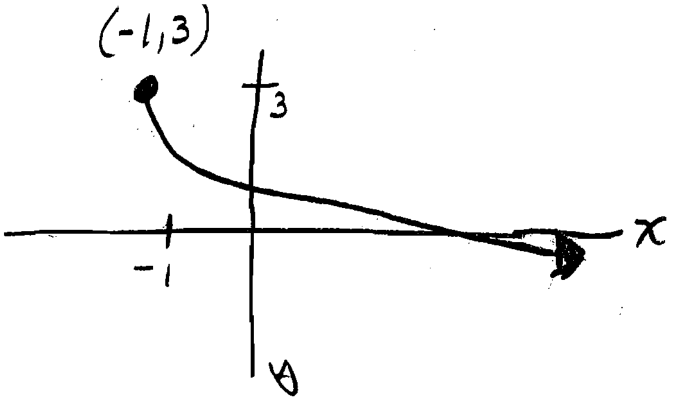
D) $y=\frac{1}{2}(x+1)-3$
E) $y=\frac{1}{2}(x-1)+3$
F) $y=\frac{1}{2}(x-1)-3$
G) $y=\frac{1}{2}(x+1)+3$



(12-246 M,B)

(681) Start with the graph of $y=x^2$. Which is the correct sequence to get the graph of $y=\frac{1}{2}(x-1)^2-3$?

H) COMPRESS, LEFT 1, DOWN 3.
J) STRETCH, LEFT 1, DOWN 3.
K) COMPRESS, RIGHT 1, DOWN 3.
L) STRETCH, RIGHT 1, UP 3



(12-247)

(682) The graph at the right is the graph of

M) $y = -2\sqrt{x+1} + 3$

O) $y = -2\sqrt{x-1} + 3$

P) $y = -2\sqrt{x-1} - 3$

R) $y = -2\sqrt{x+1} - 3$

(12-249)

(683) which of the following is an example of a rational function?

S) $f(x) = \dfrac{\sqrt{2x-1}}{3x+2}$

T) $f(x) = \dfrac{6x-7}{3x-3}$

U) $f(x) = \dfrac{5x^2 - 7x^{1/3} + 2}{3x^{1/5} - 2}$

W) None of S), T), and U).

(12-249 M)

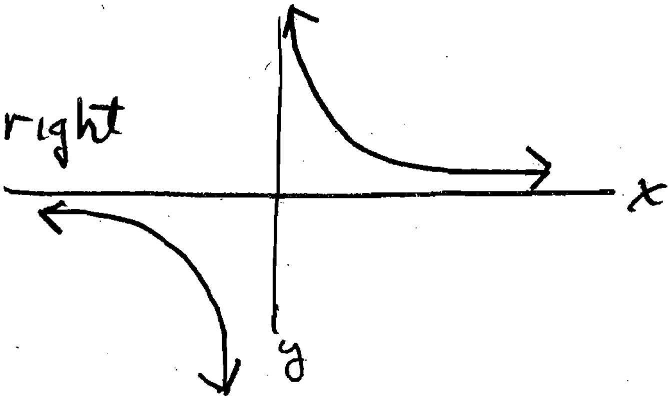
(684) True or False: Every polynomial is a rational function.

T) True

F) False

(12-249B)

685) The graph at the right is the graph of



A) $\frac{1}{x}+\frac{1}{y}=1$

B) $\frac{1}{x}-\frac{1}{y}=1$

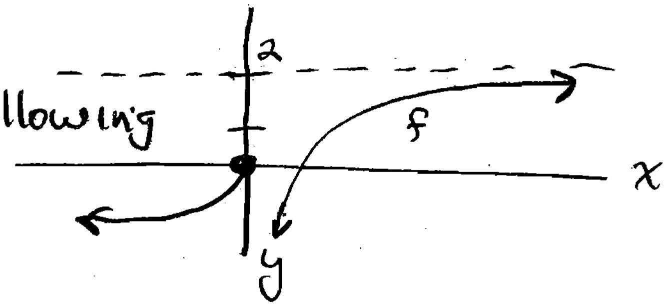
C) $\frac{1}{x}=\frac{1}{y}$

D) $y=1/x$

E) None of A), B), C), and D)

(12-250 T)

686) Which of the following is the asymptote equation for the graph at the right.



A) $x=2$

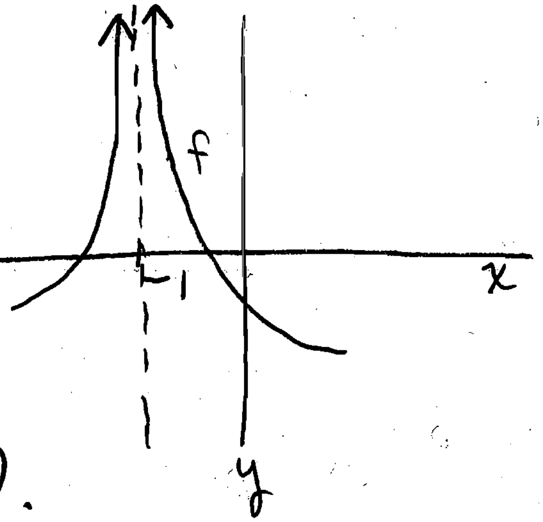
B) $y=2$

C) $y=2x$

D) None of A), B), and C).

(12-250 M)

687) Which of the following is the asymptote equation for the graph at the right



E) $x=-1$

F) $y=-1$

G) $y=-x$

H) None of E), F), and G).

(12-250, 251)

688 $y = \frac{6x-7}{3x-3}$ is equivalent to the equation

J) $y = \frac{1}{3}\left(\frac{1}{x-1}\right) + 2$

K) $y = \frac{1}{3}\left(\frac{1}{x-1}\right) - 7$

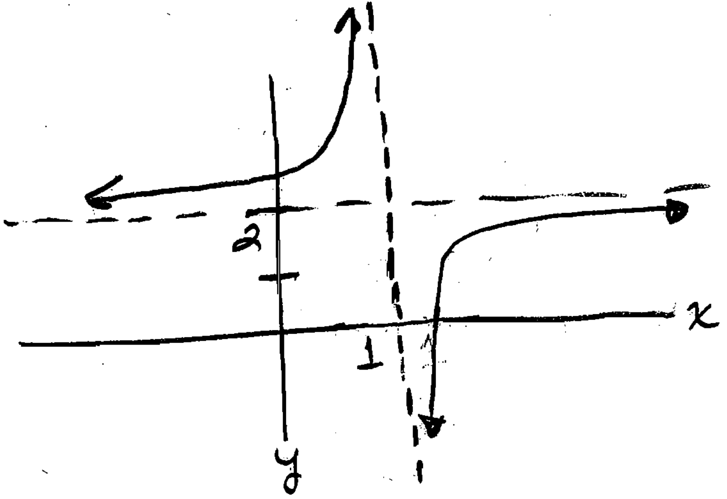
L) $y = -\frac{1}{3}\left(\frac{1}{x-1}\right) - 2$

M) $y = -\frac{1}{3}\left(\frac{1}{x-1}\right) + 2$

O) None of J), K), L), and M)

(12-251B)

689 The graph at the right is the graph of



P) $y = \frac{1}{3}\left(\frac{1}{x-1}\right) + 2$

Q) $y = \frac{1}{3}\left(\frac{1}{x+1}\right) + 2$

R) $y = -\frac{1}{3}\left(\frac{1}{x+1}\right) + 2$

S) $y = -\frac{1}{3}\left(\frac{1}{x-1}\right) + 2$

(12-252T)

(690) What is the x-intercept for $y = \frac{6x-7}{3x-3}$?

T) $(0, \frac{7}{3})$

U) $(\frac{7}{6}, 0)$

W) $(\frac{7}{6}, \frac{7}{3})$

X) None of T), U), and W)

(12-252B)

(691) The graph of f is symmetric about the y-axis iff

A) $f(x) = -f(x)$

B) $f(x) = f(-x)$

C) $f(-x) = -f(x)$

D) $f(-x) = -f(-x)$

E) None of A), B), C), and D)

(12-253T)

(692) A function is an <u>even</u> function if its graph is symmetric about the

F) x-axis

G) y-axis

H) origin

J) the line $y = x$

(12-253 M)

(693) If an equivalent equation results from substituting $-x$ for x in an equation, the graph is symmetric about the

K) x-axis
L) y-axis
M) origin
O) the line $y=x$
P) None of K), L), M), and O).

(12-253 M)

(694) which equation below results from substituting $-x$ for x in $x^2+y^2=4$, and then simplifying.

Q) $y^2-x^2=4$
R) $-x^2+y^2=4$
S) $x^2+y^2=4$
T) None of Q), R), S), and T).

(12-254 B)

(695) If an equivalent equation results from substituting $-y$ for y in an equation, the graph is symmetric about the

A) origin
B) x-axis
C) y-axis
D) the line $y=x$
E) None of A), B), C), and D).

(12-255T)

(696) True or False: The graph of $x=2y+y^4$ is symmetric about the x-axis.

T) True

F) False

(12-255T)

(697) True or False: The graph of $x=y^2$ is symmetric about the x-axis

T) True

F) False

(12-255B)

(698) The graph of f is symmetric about the origin if and only if

G) $f(x)=f(-x)$

H) $f(-x)=-f(x)$

I) $f(x)=-f(x)$

J) None of G), H), and I).

(12-256T)

(699) True or False: $f(x)=x^3$, its graph is symmetric about the origin

T) True

F) False

(12-255 B)

(700) A function is an *odd* function if its graph is symmetric about the

K) x-axis
L) y-axis
M) origin
O) the line $y = x$
P) None of these

(12-256 T)

(701) To check to see if the graph of an equation is symmetric about the *origin* see if an equivalent equation results by substituting

R) $-x$ for x
S) $-y$ for y
T) $-x$ for x and $-y$ for y
U) None of R), S), T), and U).

(12-256 B)

(702) Is the graph of $2y^2 = x^3 - x^5$ symmetric about the origin?

Y) Yes

N) No

(12-258B)

(703) Solving $4x^2+9y^2=36$ for y^2 gives

A) $\frac{36+4x^2}{9}$

B) $\frac{36-9x^2}{4}$

c) $\frac{36-4x^2}{9}$

D) None of A), B), and C).

(12-258B, 259T)

(704) If $y^2=\frac{36-4x^2}{9}$, then $|y|=\frac{2}{3}$ ______.
Fill in the blank with

E) $36-x^2$

F) $\sqrt{36-4x^2}$

G) $\sqrt{9-x^2}$

H) $\sqrt{36-x^2}$

J) None of E), F), G), and H).

(12-259T)

(705) The graph for $|y|=\frac{2}{3}\sqrt{9-x^2}$ only exists when

K) $-\frac{2}{3}\le x\le\frac{2}{3}$

L) $-3\le x\le 3$

m) $x\ge 3$ or $x\le -3$

θ) $x\ge\frac{2}{3}$ or $x\le -\frac{2}{3}$

P) None of K), L), M), and θ).

(12-258T, M)

(706) $4x^2+9y^2=36$ is equivalent to the equation

Q) $\frac{x^2}{2^2}+\frac{y^2}{3^2}=1$

R) $\frac{x^2}{3^2}+\frac{y^2}{2^2}=1$

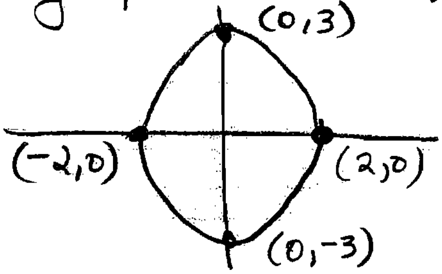
S) $\frac{x^2}{3}+\frac{y^2}{2}=1$

T) None of Q), R), and S).

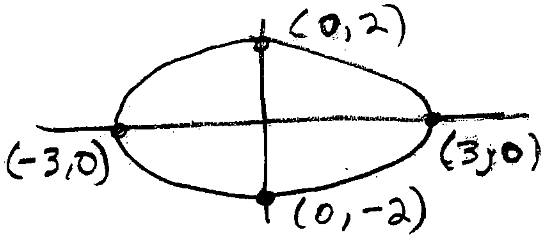
(12-258, 259, 260)

(707) The graph of $4x^2+9y^2=36$ is

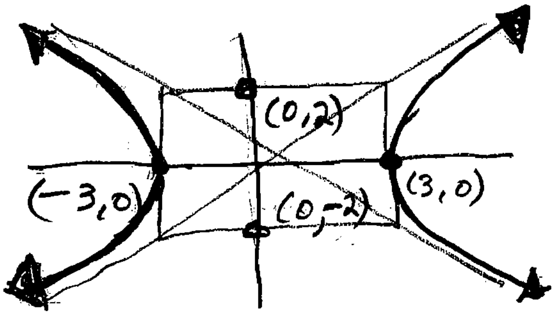
U)



W)



X)



Z) None of U), W), and X).

(12-260B)

(708) Which equation below is standard form for the ellipse $4x^2+9y^2=36$?

A) $\frac{(x-0)^2}{2^2}+\frac{(y-0)^2}{3^2}=1$

B) $\frac{(x-0)^2}{2^2}-\frac{(y-0)^2}{3^2}=1$

C) $\frac{(x-0)^2}{3^2}+\frac{(y-0)^2}{2^2}=1$

D) $\frac{(x-0)^2}{3^2}-\frac{(y-0)^2}{2^2}=1$

E) None of A), B), C), and D)

(12-260.1B)

(709) Which equation below is standard form for an ellipse centered at (h,k)?

F) $\frac{(x-h)^2}{a^2}-\frac{(y-k)^2}{b^2}=1$

G) $\frac{(x-h)^2}{a^2}+\frac{(y-k)^2}{b^2}=1$

H) $\frac{(x+h)^2}{a^2}+\frac{(y+k)^2}{b^2}=1$

J) $\frac{(x-k)^2}{a^2}+\frac{(y-h)^2}{b^2}=1$

K) None of F), G), H), and J).

(12-260A;T)

710 The major axis for the ellipse $\frac{(x-2)^2}{5^2} + \frac{(y-3)^2}{4^2} = 1$ goes from

L) (0,0) to (5,0)
M) (0,0) to (5,4)
θ) (2,3) to (5,4)
P) (2,3) to (5,7)
R) (-3,3) to (7,3)
S) None of L), M), θ), P), and R).

(12-260A,T)

711 The minor axis for the ellipse $\frac{(x-2)^2}{5^2} + \frac{(y-3)^2}{4^2} = 1$ goes from

A) (2,3) to (2,7)
B) (2,3) to (2,-1)
C) (0,0) to (0,4)
D) (2,-1) to (2,7)
E) None of A), B), C), and D)

(12-260A, B)

712 The beginning steps to put $4x^2+2y^2+24x-4y+30=0$ into standard form for an ellipse are

$$4x^2+24x \quad +2y^2-4y \quad = -30$$

$$4(x^2+6x \quad)+2(y^2-2y \quad)=-30$$

What is the next line that completes the square inside the parentheses?

F) $4(x^2+6x+36)+2(y^2-2y+4)=-30$

G) $4(x^2+6x+36)+2(y^2-2y+4)=-30+144+8$

H) $4(x^2+6x+9)+2(y^2-2y+1)=-30+36+2$

J) $4(x^2+6x+9)+2(y^2-2y+1)=-30$

K) None of F), G), H), and J).

(12-260B, T)

713 $4(x+3)^2+2(y-1)^2=8$ put in standard form for an ellipse is

L) $\frac{(x-[-3])^2}{2^2}+\frac{(y-1)^2}{4^2}=1$

M) $\frac{(x-[-3])^2}{(\sqrt{2})^2}+\frac{(y-1)^2}{2^2}=1$

O) $\frac{(x-[-3])^2}{2^2}+\frac{(y-1)^2}{(\sqrt{2})^2}=1$

P) None of L), M), and O).

(12-260B, B)

(714) The major axis for the ellipse $\frac{(x-[-3])^2}{(\sqrt{2})^2}+\frac{(y-1)^2}{2^2}=1$ goes from

Q) $(-3,-1)$ to $(-3,3)$
R) $(-3,1)$ to $(\sqrt{2},2)$
S) $(-3,1-\sqrt{2})$ to $(-3,1+\sqrt{2})$
T) $(-3-\sqrt{2},1)$ to $(-3+\sqrt{2},1)$
U) None of Q), R), S), and T).

(12-260B, B)

(715) The minor axis for the ellipse $\frac{(x-[-3])^2}{(\sqrt{2})^2}+\frac{(y-1)^2}{2^2}=1$ goes from

A) $(-3,1)$ to $(\sqrt{2},2)$
B) $(-3-\sqrt{2},1)$ to $(-3+\sqrt{2},1)$
C) $(-3,-1)$ to $(-3,3)$
D) $(-3,1-\sqrt{2})$ to $(-3,1+\sqrt{2})$
E) None of A), B), C), and D).

(12-260c)

71 (716) The standard form for the equation of a hyperbola is

F) $\frac{(x-h)^2}{a^2} - \frac{(y-k)^2}{b^2} = 1$

G) $\frac{(x-h)^2}{a^2} + \frac{(y-k)^2}{b^2} = 1$

H) $\frac{(x-h)}{a} - \frac{(y-k)}{b} = 1$

J) $(x-h) + (y-k) = ab$

K) None of F), G), H), and J).

(12-260C, M)

(717) The vertices for the hyperbola $\frac{x^2}{3^2} - \frac{y^2}{2^2} = 1$ are

L) $(0,0)$ and $(3,2)$

M) $(0,0)$ and $(3^2, 2^2)$

Θ) $(0,2)$ and $(0,-2)$

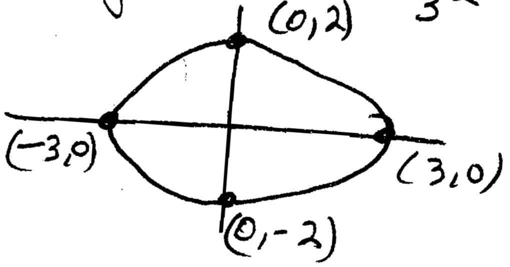
P) $(0,3)$ and $(0,-3)$

R) None of L), M), Θ), and P)

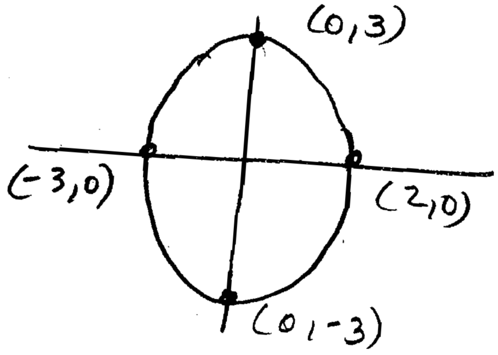
(12-260C, M)

(718) The graph of $\frac{x^2}{3^2} - \frac{y^2}{2^2} = 1$ is

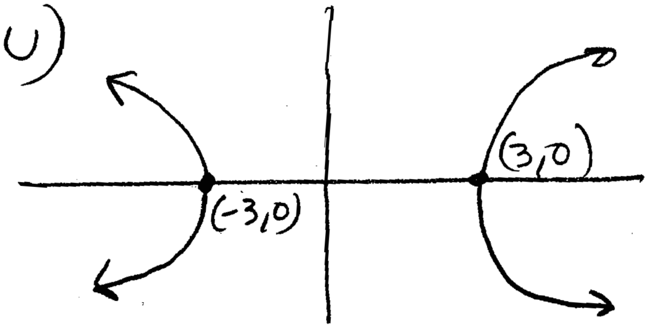
S)



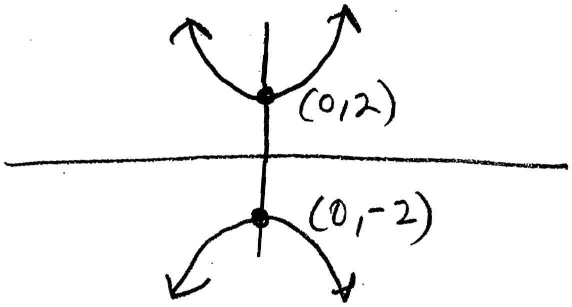
T)



U)



W)



X) None of S), T), U), and W).

(12-260C, B; 260D, T)

(719) Beginning to put into standard form for a hyperbola can be as follows

$9y^2 - 4x^2 - 16x - 18y - 43 = 0$

$9y^2 - 18y \quad - 4x^2 - 16x = 43$.

What is a correct next step?

A) $9(y^2 - 18y \quad) - 4(x^2 - 16x \quad) = 43$

B) $9(y^2 - 2y \quad) - 4(x^2 - 4x \quad) = 43$

C) $9(y^2 - 2y \quad) - 4(x^2 + 4x \quad) = 43$

D) None of A), B), and C).

(12-260D, T)

(720) Which is a correct next line that follows from

$9(y^2 - 2y \quad) - 4(x^2 + 4x \quad) = 43$?

E) $9(y^2 - 2y + 1) - 4(x^2 + 4x + 4) = 43 + 9 - 4$

F) $9(y^2 - 2y + 1) - 4(x^2 + 4x + 4) = 43 + 9 + 16$

G) $9(y^2 - 2y + 1) - 4(x^2 + 4x + 4) = 43 + 9 - 16$

H) $9(y^2 - 2y + 1) - 4(x^2 + 4x + 4) = 43$

J) $9(y^2 - 2y + 4) - 4(x^2 + 4x + 16) = 43 + 36 - 4(16)$

K) None of E), F), G), H), and J).

(12-260P, M)

721 $9(y-1)^2 - 4(x+2)^2 = 36$ put in standard form for a hyperbola is

L) $\dfrac{(y-1)^2}{3^2} - \dfrac{(x+2)^2}{2^2} = 1$

M) $\dfrac{(y-1)^2}{2^2} - \dfrac{(x-[-2])^2}{3^2} = 36$

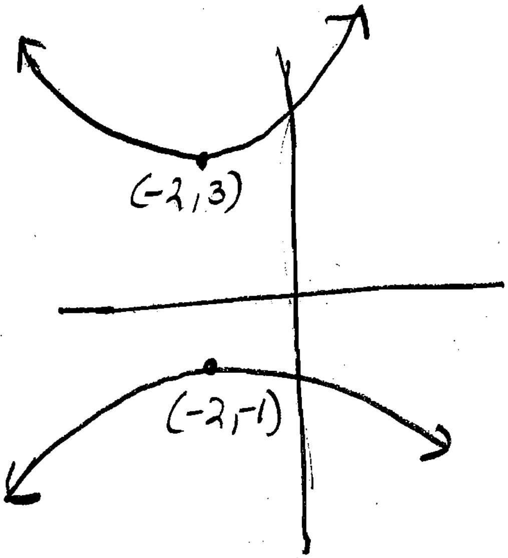
θ) $\dfrac{(y-1)^2}{2^2} - \dfrac{(x-[-2])^2}{3^2} = 1$

P) $\dfrac{(y-1)^2}{2^2} + \dfrac{(x-[-2])^2}{3^2} = 1$

R) None of L), M), θ), and P).

(12-260E, T)

722 The graph at the right is the graph for



S) $\dfrac{(y-1)^2}{2^2} - \dfrac{(x-[-2])^2}{3^2} = 1$

T) $\dfrac{(x-[-2])^2}{3^2} - \dfrac{(y-1)^2}{2^2} = 1$

U) $\dfrac{(x-[-2])^2}{3^2} + \dfrac{(y-1)^2}{2^2} = 1$

W) None of S), T), and U).

(12-260E, B)

723 Ellipses, hyperbolas, and parabolas are called

A) Pythagorean triples
B) Conic Sections
C) Euclidean mainstays
D) Boolean Algebras
E) None of A), B), C), and D).

(13-262T)

724 Which is the definition for $(fg)(x)$?

$(fg)(x) =$

F) $f(g(x))$
G) $g(f(x))$
H) $f(x)g(x)$
J) None of F), G), and H).

(13-262M)

725 The domain for $f-g$ is

K) $\mathrm{dom}(f)-\mathrm{dom}(g)$
L) $\mathrm{dom}(f)\cap\mathrm{dom}(g)$
M) $\mathrm{dom}(f)\cup\mathrm{dom}(g)$
O) $\{x \mid x\in\mathrm{dom}(f)\cap\mathrm{dom}(g) \text{ and } g(x)\neq 0\}$
P) None of K), L), M), and O).

(13-262 B)

726 The domain of $\frac{f}{g}$ is

Q) $\operatorname{dom}(f) \cap \operatorname{dom}(g)$

R) $\{x \mid x \in \operatorname{dom}(f) \cap \operatorname{dom}(g) \text{ and } g(x) \neq 0\}$

S) $\{x \mid x \in \operatorname{dom}(f) \cap \operatorname{dom}(g) \text{ and } f(x) \neq 0\}$

T) None of Q), R), and S)

(13-263 T)

727 Let f and g be functions defined by $f = \{(1,5), (2,6), (3,7)\}$ and $g = \{(2,8), (3,0), (4,9)\}$.
The product function $fg =$

A) $\{(1,5), (2,48), (3,0), (4,9)\}$

B) $\{(2,48), (3,0)\}$

C) $\{(1,5), (2,6), (3,7), (2,8), (3,0), (4,9)\}$

D) None of A), B), and C)

(13-263 M)

728 Let f and g be functions defined by $f = \{(1,5), (2,6), (3,7)\}$ and $g = \{(2,8), (3,0), (4,9)\}$.
The function $\frac{f}{g} =$

E) $\{\ \}$

F) $\{(1, \frac{5}{8}), (2, \frac{6}{8}), (3,0), (4,9)\}$

G) $\{\frac{6}{8}\}$

H) $\{(2, \frac{3}{4})\}$

J) None of E), F), G), and H)

(13-264 T)

⑦29 $f(x) = (x-2)^{3/2}$ and $g(x) = \frac{x-3}{x-2}$. dom$(f+g)$=

K) $[2, \infty)$

L) $(2, \infty)$

M) $\{x \mid x \neq 2\}$

O) $(-\infty, 2)$

P) None of K), L), M), and O)

(13-264 M)

(730) $f(x) = (x-2)^{3/2}$ and $g(x) = \frac{x-3}{x-2}$. $(fg)(x)$ =

Q) $(x-2)^{1/2}(x-3)$

R) $(x-2)^{5/2}(x-3)$

S) $\frac{x-3}{(x-2)^{5/2}}$

T) $(x-3)(x-2)$

U) None of Q), R), S), and T).

(13-265T)

(731) $f(x) = (x-2)^{3/2}$ and $g(x) = \frac{x-3}{x-2}$. $\left(\frac{f}{g}\right)(x)$ =

A) $(x-2)^{1/2}(x-3)$

B) $\frac{(x-2)}{(x-3)}$

C) $\frac{(x-2)^{5/2}}{x-3}$

D) None of A), B), and C)

(13-265B)

(732) The definition for composition of function f and g is $(f \circ g)(x) =$

E) $f(x)g(x)$
F) $g(f(x))$
G) $f(g(x))$
H) $(fg)(x)$
J) None of E), F), G), and H).

(13-265B)

(733) The domain for the composition of two functions f and g is $\text{dom}(f \circ g) =$

K) $\{x \mid x \in \text{dom}(f) \text{ and } x \in \text{dom}(g)\}$
L) $\{x \mid x \in \text{dom}(f) \text{ and } x \in \text{dom}(g) \text{ and } g(x) \neq 0\}$
M) $\{x \mid x \in \text{dom}(f) \text{ and } g(x) \in \text{dom}(f)\}$
Θ) $\{x \mid x \in \text{dom}(g) \text{ and } g(x) \in \text{dom}(f)\}$
P) None of K), L), M), and Θ).

(13-266T)

(734) $f(x) = \sqrt{x} + 2x^2 - 7$, $g(x) = 2x - 1$. $(f \circ g)(x) =$

Q) $2\sqrt{x} + 4x^2 - 15$
R) $\sqrt{2x-1} + 2(2x-1)^2 - 7$
S) $\sqrt{2x-1} + 2x^2 - 7$
T) $(\sqrt{x} + 2x^2 - 7)(2x-1)$
U) None of Q), R), S), and T)

(13 – 266)

735 $f(x) = \sqrt{x} + 2x^2 - 7$, $g(x) = 2x - 1$. $(g \circ f)(x) =$

A) $2\sqrt{x} + 4x^2 - 15$

B) $\sqrt{2x-1} + 2(2x-1)^2 - 7$

C) $\sqrt{2x-1} + 2x^2 - 7$

D) $2\sqrt{x} + 4x^2 - 1$

E) None of A), B), C), and D).

(13 – 266 M)

736 $f(x) = \sqrt{x} + 2x^2 - 7$, $g(x) = 2x - 1$. $\mathrm{dom}(f \circ g) =$

F) $(-\infty, \infty)$

G) $\{x \mid x \neq \frac{1}{2}\}$

H) $[0, \infty)$

J) $[\frac{1}{2}, \infty)$

K) None of F), G), H), and J).

(13 – 267 T)

737 Composition of functions: $(h \circ w)(2) =$

L) $h(2)\,w(2)$

M) $h(w(2))$

θ) $w(h(2))$

P) $(wh)(2)$

R) None of L), M), θ), and P)

(13-268T)

738 $h(x)=2\sqrt{x}-4x^3+21$, $w(x)=3x+2$. $(h\circ w)(x)=$

S) $3(2\sqrt{x}-4x^3+21)+2$
T) $2\sqrt{3x+2}-4x^3+21$
U) $2\sqrt{3x+2}-4(3x+2)^3+21$
W) $2\sqrt{3x+2}-4(3x+2)^3+2$
X) None of S), T), U), and W).

(13-268M)

739 $h(x)=2\sqrt{x}-4x^3+21$, $w(x)=3x+2$. $(h\circ w)(1)=$

A) $(2\sqrt{1}+4(1^3)+21)(3(1)+2)$
B) $3(2\sqrt{1}+4(1^3)+21)+2$
C) $2\sqrt{5}-4(5^3)+21$
D) $2\sqrt{5}-4(1^3)+2$
E) None of A), B), C), and D).

(13-268B)

740 $H(x)=\sqrt{x-3}$ is the composition of two functions f and g such that $H(x)=(f\circ g)(x)$, where f and g are

F) $f(x)=x-3$ and $g(x)=\sqrt{x}$
G) $f(x)=\sqrt{x}$ and $g(x)=x-3$
H) $f(x)=\sqrt{x}-3$ and $g(x)=x$
J) $f(x)=x$ and $g(x)=\sqrt{x}-3$
K) None of F), G), H), and J).

(13-269T)

741 $H(x) = 5(x-3)^2 + (x-3)^{1/3} + 2$ is the composition of two functions f and g such that $H(x) = (f \circ g)(x)$, where f and g are

L) $f(x) = 5x^2 + x^{1/3} + 2$ and $g(x) = x - 3$

M) $f(x) = x - 3$ and $g(x) = 5x^2 + x^{1/3} + 2$

Θ) $f(x) = 5(x-3)^2 + x^{1/3} + 2$ and $g(x) = x$

P) $f(x) = 5(x-3)^2$ and $g(x) = (x-3)^{1/3} + 2$

R) None of L), M), Θ), and P)

(13-269B)

742 Let f and g be functions such that $f = \{(1,7), (2,6), (3,8)\}$ and $g = \{(5,2), (9,3), (4,10)\}$.

$f \circ g =$

S) $\{(1,2), (2,3), (3,10)\}$

T) $\{(2,5), (3,9), (4,10)\}$

U) $\{(5,6), (9,8)\}$

W) None of S), T), and U)

(13-271T)

743 For the function f, f inverse, denoted $f^{-1} =$

A) $\{\frac{1}{f(x)} \mid x \in dom(f)\}$

B) $\{(y,x) \mid (x,y) \in f\}$

C) $\{(\frac{1}{x}, \frac{1}{y}) \mid (x,y) \in f\}$

D) None of A), B), and C)

(13-271 M)

744 Let $f=\{(1,3),(2,6)\}$ $f^{-1}(6)=$

E) $\frac{1}{2}$
F) 3
G) 2
H) None of E), F), and G).

(13-271 M)

745 Let $f=\{(1,3),(2,6)\}$. $f(f^{-1}(3))=$

J) 3
K) 1
L) 2
M) 6
θ) None of J), K), L), and M).

(13-271 B)

746 Suppose h is a function such that h^{-1} is a function and $h^{-1}(3)=2$. which of the ones below is true?

P) $2 \in h$
Q) $2 \in h^{-1}$
R) $(2,3) \in h$
S) $(2,3) \in h^{-1}$
T) None of P), Q), R), and S.

(13-272M)

747 For $f = \{(7,5),(8,\_\_)\}$ what is the blank filled in with so that f inverse is <u>not</u> a function?

U) 7
W) 6
X) 5
Z) None of U), W), and X).

(13-272B)

748 The function f is one-to-one if and only if no two ordered pairs

A) have the same first term
B) have the same second term.
C) None of A) and B).

(13-272B)

749 For $f = \{(1,3),(2,\_\_)\}$, what is the blank filled in with so that f is one-to-one?

D) 6
E) 3
F) None of D) and E).

(13-272B)

750 True or False: $f = \{(7,5),(8,5)\}$ is one-to-one.

T) True
F) False

(13-273T)

(751) True or False: For one-to-one functions f, f^{-1} is a function.

T) True

F) False

(13-273T)

(752) For the function f, which of the following means the same thing as <u>f is one-to-one</u>?

G) f is invertible.

H) f is even

J) f is symmetric

K) None of G), H), and J).

(13-273M)

(753) The function f is 1-1 if and only if

L) No verticle line intersects the graph of f twice.

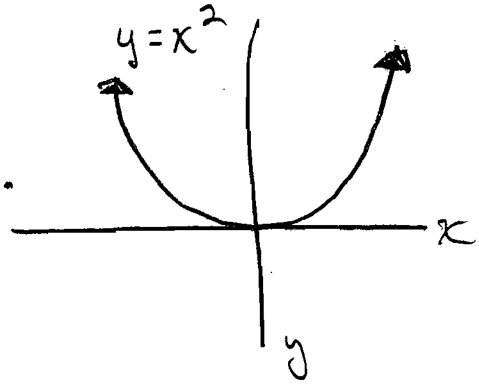
M) No horizontal line intersects the graph of f twice.

Θ) The line $y=x$ does not intersect the graph of f twice

P) None of L), M), and Θ).

(13-273)

(754) At the right is the graph of $y = x^2$ (i.e. $f(x) = x^2$). Is f one-to-one?



Y) Yes

N) No

(13-274T)

(755) For the 1-1 function $f(x) = 2x+1$, $f(2) = 2(2)+1$. $f^{-1}(5) =$

Q) 1

R) 4

S) 5

T) 2

U) None of Q), R), S), and T).

(13-274 M, B; 2757)

(756) Let $f(x) = 2x+1$. The formula for $f^{-1}(x)$ is $f^{-1}(x) =$

A) $\frac{1}{2x+1}$

B) $2(\frac{1}{x})+1$

C) $\frac{x-1}{2}$

D) $2x+1$

E) None of A), B), C), and D).

(13–275B)

757 Let $f(x) = x^2 - 6x + 11 \quad x < 3$.
f is 1-1. The formula for $f^{-1}(x)$ is $f^{-1}(x) =$

F) $(x-3)^2+2$

G) $-\sqrt{x-2}\ +3$

H) $\sqrt{x-2}\ +3$

J) $\sqrt{x-2}$

K) None of F), G), H), and J).

(13-276B)

758 The graphs of f and f^{-1} are mirror reflections about the line

L) $y = x$

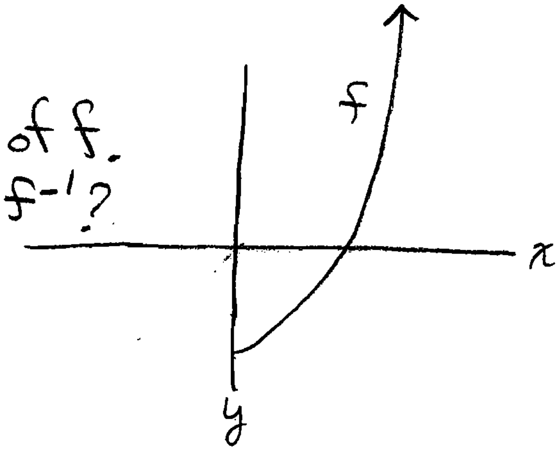
M) x-axis

P) y-axis

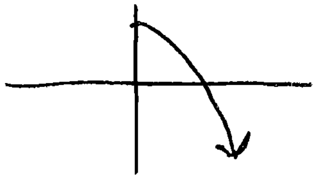
Q) None of L), M), and P)

(13–276B)

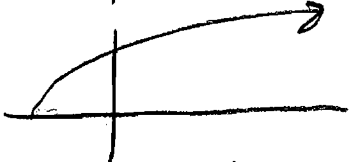
759 At the right is the graph of f. Which below is the graph of f^{-1}?



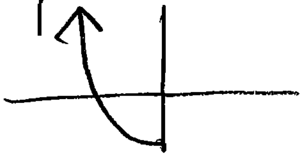
R)



S)



T)



(14-278T)

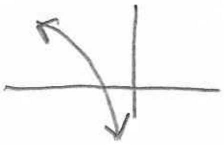
(760) The number e approximated to one decimal place is

u) 2.7
w) 3.14
x) 22/7
z) None of u), w), and x).

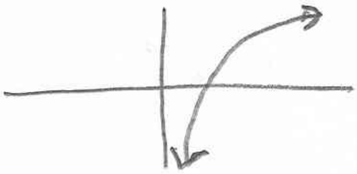
(14-278B)

(761) Which of the graphs below is the graph of $f(x) = 2^x$

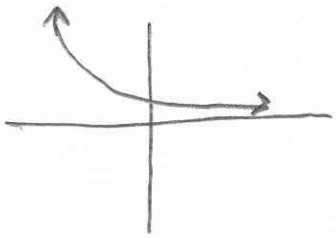
A)



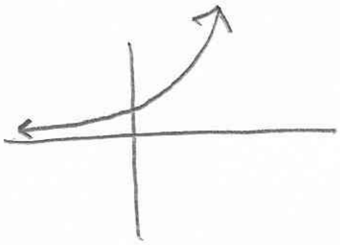
B)



c)



D)



(14-279T)

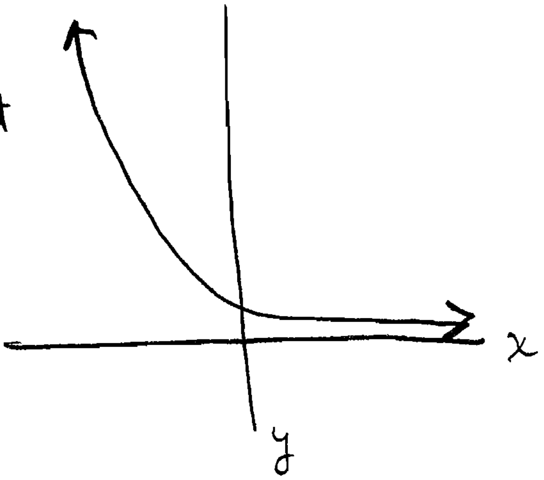
762 The graph at the right is the graph of $f(x) =$

E) 2^x

F) e^x

G) $(\frac{1}{2})^x$

H) x^2



(14-279M)

763 The graphs of $f(x) = (\frac{1}{2})^x$ and $g(x) = 2^x$ are reflections of each other about

J) the x-axis

K) the y-axis

L) the line $y = x$

M) None of J), K), and L).

(14-280T)

764 The graph of $y = 2^{x-3}$ is the graph of $y = 2^x$ translated

N) up 3

O) down 3

P) right 3

R) left 3

(14-280T)

(765) The graph of $y=2^{x-3}+4$ is the graph of $y=2^{x-3}$ translated

S) up 4
T) down 4
U) left 4
W) right 4

(14-280M)

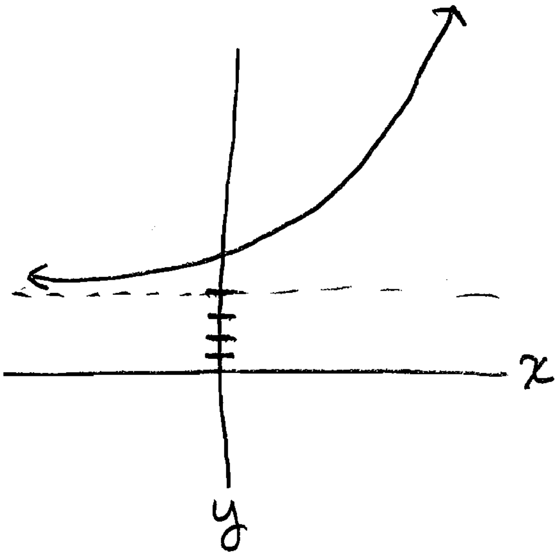
(766) What line is an asymptote for $y=2^{x-3}+4$?

A) $x=2$
B) $y=3$
C) $x=4$
D) $y=4$
E) $y=2$
F) None of A), B), C), D), and E).

(14-280M)

(767) The graph at the right is the graph for

G) $y=2^{x+3}+4$
H) $y=2^{x+3}-4$
J) $y=2^{x-3}-4$
K) $y=2^{x-3}+4$



(14-281T)

(768) The graph of $y=e^{x+3}$ is the graph of $y=e^{x}$ translated

L) up 3
M) down 3
O) left 3
P) right 3

(14-281m)

(769) The graph of $y=e^{-x+3}$ is the graph of $y=e^{x+3}$ reflected about the

Q) x-axis
R) y-axis
S) the line $y=x$
T) None of Q), R), and S).

(14-281B)

(770) What line is an asymptote for $y=e^{3-x}-2$?

A) $x=2$
B) $x=-2$
C) $x=3$
D) $y=2$
E) $y=-3$
F) None of A), B), C), D), and E)

(14-281M)

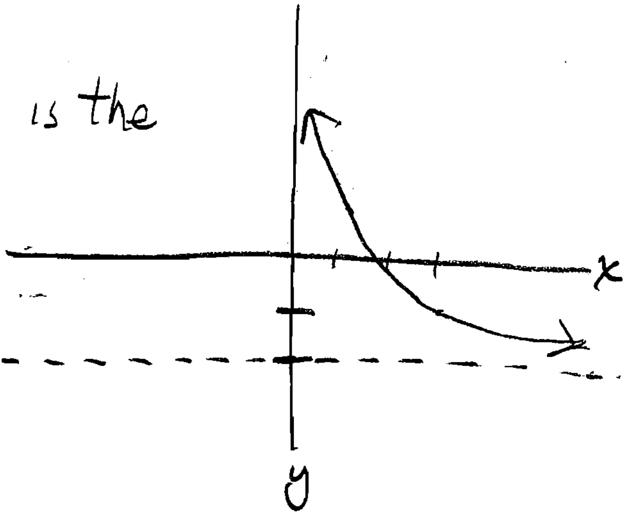
(771) The graph at the right is the graph for

G) $y = e^{3-x} - 2$

H) $y = e^{3+x} - 2$

J) $y = e^{3+x} + 2$

K) $y = e^{3-x} + 2$



(14-283T)

(772) $\log_a x = y$ if and only if

L) $a^x = y$

M) $y^x = a$

θ) $x^y = a$

P) $a^y = x$

R) None of L), M), θ), and P).

(14-283 M)

(773) $\log_3 9 =$

S) $\frac{1}{2}$

T) 2

U) 3^2

W) 9^3

X) None of S), T), U), and W).

(14-283B)

774 $\log_3 \frac{1}{9} =$

A) 2
B) 3^2
C) -2
D) 3^{-2}
E) None of A), B), C), and D)

(14-284T)

775 $\log_5 \square = 3$ So $\square =$

F) 3^5
G) 125
H) 5^{-3}
J) None of F), G), and H)

(14-284M)

776 For $a > 0$, $\log_a 1 =$

K) a^1
L) 1^a
M) $\frac{1}{a}$
O) 0
P) None of K), L), M), and O)

(14-284 B)

(777) A common log is a log to the base

Q) e
R) 10
S) 1
T) 0
U) None of Q), R), S), and T).

(14-284 B)

(778) log 100 =

A) 2
B) 10
C) 10^2
D) 2^{10}
E) None of A), B), C), and D).

(14-285T)

(779) A natural log is a log to the base

F) e
G) 10
H) 1
J) 0
K) None of F), G), H), and J).

(14-285 T)

780 $\ln e =$

L) e^1
M) 0
O) 2.7
P) 1
R) None of L), M), O), and P).

(14-285 M)

781 $\ln e^2 =$

S) 2
T) 10^e
U) e^2
W) 1
X) None of S), T), U), and W).

(14-285 M)

782 $\ln \frac{1}{e} =$

A) $-e$
B) -1
C) e^{-1}
D) 10^{-e}
E) None of A), B), C), and D)

(14-286T)

(783) What is exponential form for $\log_3 9 = 2$?

F) $2^3 = 9$

G) $9^2 = 3$

H) $3^{-2} = 9$

I) $3^2 = \frac{1}{9}$

J) None of F), G), H), and I)

(14-286T)

(784) What is the log form for $10^2 = 100$?

K) $\log_{100} 10 = 2$

L) $\log_2 100 = 10$

M) $\log 100 = 2$

O) $\log 2 = 100$

P) None of K), L), M), and O).

(14-286T)

(785) What is the logarithmic form for $e^{-1} = \frac{1}{e}$?

Q) $\log \frac{1}{e} = -1$

R) $\ln \frac{1}{e} = -1$

S) $\ln -1 = \frac{1}{e}$

T) $\ln \frac{1}{e} = e^{-1}$

U) None of Q), R), S), and T).

(14-286M)

(786) What is the log form for $5^3 = 125$?

A) $\log_5 125 = 3$

B) $\log_3 125 = 5$

C) $\log_{125} 3 = 5$

D) $\log_5 3 = 125$

E) None of A), B), C), and D).

(14-286 M)

(787) What is the logarithmic form for $2^{-3} = \frac{1}{8}$?

F) $\log_2 -3 = \frac{1}{8}$

G) $\log_2 3 = -\frac{1}{8}$

H) $\log_3 -2 = \frac{1}{8}$

J) $\log_3 \frac{1}{8} = -2$

K) None of F), G), H), and J)

(14-286 B)

(788) What is exponential form for $\log 2z = x$?

L) $10^{2z} = x$

M) $10^x = 2z$

O) $e^x = 2z$

P) $e^{2z} = x$

R) None of L), M), O), and P).

(14-286B)

(789) The logarithmic form for $5^{2x} = m$ is

S) $\log_5 2x = m$

T) $\log_5 m = 2x$

U) $\log_m 2x = 5$

W) $\log_m 5 = 2x$

X) None of S), T), U), and W).

(14-288T)

(790) What type of function is the inverse of a log function?

A) polynomial function

B) rational function

C) exponential function

D) quadratic function.

E) None of A), B), C), and D).

(14-288B)

(791) The domain of $\log_2$ is

F) $(-\infty, \infty)$

G) $(-\infty, 0)$

H) $(0, \infty)$

J) $(1, \infty)$

K) None of F), G), H), and J).

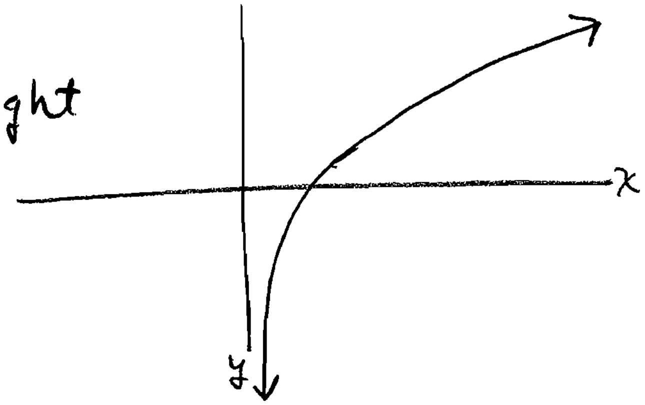
(14-288B)

792 The range of $\log_2$ is

L) $(-\infty, \infty)$
M) $(-\infty, 0)$
Θ) $(0, \infty)$
P) $(1, \infty)$
R) None of L), M), Θ), and P).

(14-289T)

793 The graph at the right is the graph for



S) $y = e^x$
T) $y = e^2$
U) $y = \log_2 x$
W) $y = x^2$

(14-289B)

794 The graph of $y = \log(x+2)$ is the graph of $y = \log(x)$ translated

A) up 2
B) down 2
C) right 2
D) left 2

(14-289B)

(795) What line is an asymptote for $y=(\log(x+2))+1$?

E) x-axis
F) y-axis
G) $x=2$
H) $x=-2$
J) $y=1$
K) None of E), F), G), H), and J).

(14-290)

(796) What is the domain for $h(x)=\log_2(x^2-9)$?

L) $(-3,3)$
M) $(3,\infty)$
O) $(-\infty,-3)$
P) $(-\infty,-3)\cup(3,\infty)$
R) None of L), M), O), and P)

(14-290)

(797) $h(x)=\log_2(x^2-9)$ is the composition of two functions, f and g where $h(x)=(f\circ g)(x)$ and

S) $f(x)=x^2-9$ and $g(x)=\log_2 x$
T) $f(x)=\log_2 x^2$ and $g(x)=x-9$
U) $f(x)=\log_2 x$ and $g(x)=x^2-9$
W) $f(x)=\log_2 x^2$ and $g(x)=x^2-9$
X) None of S), T), U), and W).

(14-291 T)

798 $\log MN =$

A) $(\log M)(\log N)$

B) $\log M + \log N$

C) $\log M^N$

D) $\log N^M$

E) None of A), B), C), and D)

(14-291 T)

799 $\log_2 5xy =$

F) $\log_2 5 + \log_2 x + \log_2 y$

G) $(\log_2 5)(\log_2 x)(\log_2 y)$

H) $\log_2 xy^5$

J) $5 \log_2 xy$

K) None of F), G), H), and J).

(14-291 T)

800 $\log 10x =$

L) $(\log 10)(\log x)$

M) $1 + \log x$

θ) $1 + \log 10$

P) $\log 10^x$

R) None of L), M), θ), and P)

(14-291B)

801 $M \cdot N = 10^{x+y}$ is the exponential form. The log form is

S) $\log_{10} x+y = MN$

T) $\log_{MN} 10 = x+y$

U) $\log_{10} MN = x+y$

W) $\ln MN = x+y$

X) None of S), T), U), and W).

(14-292T)

802 $\log\left(\frac{M}{N}\right) =$

A) $\log M - \log N$

B) $\frac{\log M}{\log N}$

c) $M \log N$

D) $N \log M$

E) None of A), B), c), and D)

(14-292T)

803 $\log_2 \frac{1}{8} =$

F) $\log 2 - \log 8$

G) -3

H) 3

J) $\frac{\log_2 1}{\log_2 8}$

K) None of F), G), H), and J.

(14-292M)

(804) $\log_2 \frac{xy}{5} =$

L) $\log_2 x - \log_2 y - \log_2 5$

M) $\frac{1}{5}\log_2 xy$

θ) $\log_2 x + \log_2 y - \log_2 5$

P) $\frac{(\log_2 x + \log_2 y)}{\log_2 5}$

R) None of L), M), θ), and P).

(14-292M)

(805) $\ln \frac{(x+1)}{yz} =$

S) $\ln(x+1) - \ln y - \ln z$

T) $\ln x + \ln 1 - \ln y - \ln z$

U) $\frac{\ln(x+1)}{\ln yz}$

W) None of S), T), and U)

(14-292B)

(806) Written as a single log, $\ln 3 - \ln y =$

A) $\frac{\ln 3}{\ln y}$

B) $\ln 3y$

C) $\ln \frac{3}{y}$

D) None of A), B), and C).

(14-292B) WRITE AS A SINGLE LOG

(807) $\ln 2 - \ln x + \ln z - \ln w =$

E) $\ln \frac{2x}{zw}$

F) $\ln \frac{2z}{xw}$

G) $\ln \frac{2w}{xz}$

H) $\frac{\ln 2z}{\ln xw}$

J) None of E), F), G), and H).

(14-293T)

(808) $\log M^N =$

K) $N \log M$

L) $M \log N$

M) $(\log N)(\log M)$

O) None of K), L), and M)

(14-293T)

(809) True or False: $\log M^N = (\log M)^N$

T) True

F) False

(14-293T)

(810) True or False: $\log M^N = \log(M^N)$

T) True

F) False

(14-293T)

(811) $\log 10^x$ =

P) 1
Q) x
R) $10 \log x$
S) $\log_{10} x$
T) None of P), Q), R), and S).

(14-293T)

(812) $\log \sqrt{x}$ =

U) $2 \log x$
W) $\frac{1}{2} \log x$
X) $x \log 2$
Z) None of U), W), and X).

(14-293M)

(813) $\ln\left(\frac{\sqrt[3]{xy}}{e}\right)$ =

A) $\frac{1}{3}(\ln x + \ln y) - 1$
B) $\frac{1}{3} \ln x + \ln y - \ln e$
C) $\frac{1}{3} \ln x \ln y - \ln e$
D) $3 \ln x + 3 \ln y - \ln e$
E) None of A), B), C), and D).

(14-293 B)

(814) The exponential form is $10^{Nx} = M^N$. The log form is

F) $\log_{10} Nx = M^N$

G) $\log_{10} Nx = NM$

H) $\log_{10} M^N = Nx$

J) $N \log_{10} M^N = M$

K) None of F), G), H), and J).

(14 - 294 T)

(815) $\log_2 2^x =$

L) 2^x

M) $2 \log_2 x$

O) x

P) 2

R) None of L), M), O), and P).

(14-294 T)

(816) $\ln e^x =$

S) $e \ln x$

T) e^x

U) x^e

X) x

Z) None of S), T), U), and X).

(14-294T)

(817) $\log 10^{x^2+1} =$

A) 10

B) x^2+1

C) $\log(x^2+1)$

D) $10\log(x^2+1)$

E) None of A), B), C), and D).

(14-294M)

(818) $2^{\log_2 x} =$

F) x

G) 2

H) $2\log_2 x$

J) $\log_2 x^2$

K) None of F), G), H), and J).

(14-294M)

(819) $10^{\log 5x} =$

L) 10

M) $\log 5x$

θ) $5x$

P) $5x\log 10^x$

R) None of L), M), θ), and P)

(14 - 294 M)

(820) $e^{\ln \square} =$

S) $\ln \square$
T) $e^{\square}$
U) $\square$
W) $\square \ln \square$
X) None of S), T), U), and W).

(14 - 294 M)

(821) $e^{\ln(x^2+1)} =$

A) $\ln(x^2+1)$
B) e^{x^2+1}
C) x^2+1
D) x^2
E) None of A), B), C), and D)

(14 - 294 T)

(822) Base change formula: $\log_a M =$

F) $\dfrac{\log_M a}{\log_b a}$
G) $\dfrac{\log_b M}{\log_b a}$
H) $\dfrac{\log_b a}{\log_b M}$
J) None of F), G), and H).

(14-295 T)

(823) $\log_7 x =$

K) $\dfrac{\log_2 x}{\log_2 7}$

L) $\dfrac{\log_2 7}{\log_2 x}$

M) $\dfrac{\log_7 2}{\log_2 x}$

O) None of K), L), and M).

(14-295 M)

(824) $\log_7 x =$

P) $\dfrac{\ln 7}{\ln x}$

Q) $\dfrac{\ln 7}{\log x}$

R) $\dfrac{\ln x}{\ln 7}$

S) $\dfrac{\log x}{\ln 7}$

T) None of P), Q), R), and S).

(14-295 B)

(825) Given $7^y = x$. Take $\log_2$ of both sides. This will eventually yield

A) $y \log_2 7 = \log_2 x$
B) $y \log_2 x = \log_2 7$
C) $y \log_7 x = \log_2 2$
D) None of A), B), and C).

(14-296 T)

(826) $\ln \frac{\sqrt{xy}}{e^2 z} =$

E) $\frac{1}{2}\ln x - \frac{1}{2}\ln y - 2\ln e + \ln z$
F) $\frac{1}{2}\ln x - \frac{1}{2}\ln y + 2\ln e + \ln z$
G) $\frac{1}{2}\ln x + \frac{1}{2}\ln y - 2\ln e + \ln z$
H) $\frac{1}{2}\ln x + \frac{1}{2}\ln y - 2\ln e - \ln z$

(14-296 B) WRITE AS A SINGLE LOG.

(827) $2 \log x^3 - 5 \log(x^2+1) + \frac{1}{2}\log(x^4+1) =$

J) $\log \frac{x^5\sqrt{x^4+1}}{5(x^2+1)}$
K) $\log \frac{x^6\sqrt{x^4+1}}{(x^2+1)^5}$
L) $\log \frac{x^6\sqrt[4]{x^2+1}}{(x^2+1)^5}$
M) None of J), K), and L).

(14-297)

828 Solving $2^{3x-1} = 7^{x}$ for x gives $x =$

N) $\ln\left(\frac{2}{8/7}\right)$

θ) $\ln\left(\frac{8/7}{2}\right)$

P) $\frac{\ln 8/7}{\ln 2}$

R) $\frac{\ln 2}{\ln 8/7}$

S) None of N), θ), P), and R).

(14-297T)

829 True or False: if $\ln 2^{3x-1} = \ln 7^{x}$, then $3x-1 \ln 2 = x \ln 7$.

T) True

F) False

(14-297T)

830 True or False: if $\ln 2^{3x-1} = \ln 7^{x}$, then $(3x-1)\ln 2 = x \ln 7$.

T) True

F) False

(14−297m)

831) If $(3x-1)\ln 2 = x\ln 7$, then which of the following is true?

T) $3x\ln 2 \quad -1 = x\ln 7$

U) $3x\ln 2 - \ln 2 = x\ln 7$

W) $(3x\ln - \ln)2 = x\ln 7$

X) $3(x-1)\ln 2 = x\ln 7$

Z) None of T), U), W), and X).

(14−297m)

832) If $3x\ln 2 - \ln 2 = x\ln 7$, then which of the following is true?

A) $x(3\ln 2 - \ln 2) = x\ln 7$

B) $x(3\ln 2 + \ln 7) = \ln 2$

C) $x(3\ln 2 - \ln 7) = \ln 2$

D) $x(3\ln 2 - \ln 7) = -\ln 2$

E) None of A), B), C), and D)

(14-297B)

833) True or False: If $x\ln\frac{8}{7} = \ln 2$, then $x = \ln\left(\frac{2}{\frac{8}{7}}\right)$.

T) True

F) False

(14-297m)

(834) If $x(3\ln 2 - \ln 7) = \ln 2$, then which of the following is true?

F) $x \ln \frac{8}{7} = \ln 2$

G) $x \frac{\ln 8}{\ln 7} = \ln 2$

H) $x \ln \frac{9}{7} = \ln 2$

J) $x \ln \frac{6}{7} = \ln 2$

K) None of F), G), H), and J).

(15-301T,m)

(835) To perform $\dfrac{2x^3 - 5x^2 + 4x - 8}{x-3}$ by synthetic division, which is the proper beginning setup?

L) $\begin{array}{r|rrrr} -3 & 2 & -5 & 4 & -8 \\ & & & & \\ \hline \end{array}$

M) $\begin{array}{r|rrrr} -3 & -2 & +5 & -4 & +8 \\ & & & & \\ \hline \end{array}$

θ) $\begin{array}{r|rrrr} 3 & 2 & -5 & +4 & -8 \\ & & & & \\ \hline \end{array}$

P) $\begin{array}{r|rrrr} 3 & -2 & +5 & -4 & +8 \\ & & & & \\ \hline \end{array}$

R) None of L), M), θ), and P).

(15-301m)

(836) When performing synthetic division for $\frac{2x^3-5x^2+4x-8}{x-3}$ what is the $\boxed{}$ below filled in with?

$$\begin{array}{r|rrrr} 3 & 2 & -5 & 4 & -8 \\ & & & \boxed{} & \\ \hline & 2 & & & \end{array}$$

S) 0
T) 3
U) −33
W) 33
X) None of S), T), U), and W).

(15-301B)

(837) When the synthetic division

$$\begin{array}{r|rrrr} 3 & 2 & -5 & 4 & -8 \\ & & 6 & 3 & 21 \\ \hline & 2 & 1 & 7 & \boxed{13} \end{array}$$

is performed, which below is true?

A) $\frac{2x^4-5x^3+4x^2-8x}{x+3} = \frac{2x^2+1x+7}{x+3} + 13$

B) $\frac{2x^3-5x^2+4x-8}{x-3} = 2x^2+1x+7 + \frac{13}{x-3}$

C) $\frac{2x^3-5x^2+4x-8}{x+3} = 2x^2+1x+7 + \frac{13}{x-3}$

D) None of A), B), and C)

(15-301 M)

(838) What is the remainder when $2x^3-5x^2+4x-8$ is divided by $x-3$? (A way is to do synthetic division.)

E) 13

F) -13

G) 29

H) -29

J) None of E), F), G), and H).

(15-302 T)

(839) When performing synthetic division for $\frac{-4x^3+15x+4}{x+2}$ which below is the beginning set up?

K) $\begin{array}{r|rrr} 2 & -4 & 15 & 4 \\ \hline & & & \end{array}$

L) $\begin{array}{r|rrrr} 2 & -4 & 0 & 15 & 4 \\ \hline & & & & \end{array}$

M) $\begin{array}{r|rrr} -2 & -4 & 15 & 4 \\ \hline & & & \end{array}$

θ) $\begin{array}{r|rrrr} -2 & -4 & 0 & 15 & 4 \\ \hline & & & & \end{array}$

P) None of K), L), M), and θ).

(15-302M)

(840) What is the remainder when $-4x^3+15x+4$ is divided by $x+2$? (A way is to do synthetic division)

Q) 66

R) −66

S) 6

T) −6

U) None of Q), R), S), and T)

(15-302B)

(841) For the synthetic division

$$\begin{array}{r|rrr} 3 & 1 & -1 & -6 \\ & & 3 & 6 \\ \hline & 1 & 2 & \boxed{0} \end{array},$$

the 0 remainder means

A) $3x+6$ is a factor of x^2-x-6.

B) $x+3$ is a factor of x^2-x-6.

C) $x-3$ is a factor of x^2-x-6.

D) $x-3$ is a factor of $x+2$.

E) None of these.

(15-302M)

(842) When doing synthetic division, as set up below, what number is the box filled in with?

F) 16

G) −16

H) 3

J) 49

K) None of F), G), H), and J).

$$\begin{array}{r|rrrr} & & & \downarrow & \\ -2 & -4 & 0 & 15 & 4 \\ & & & \boxed{} & \\ \hline \end{array}$$

(15-303T)

843 $\frac{8x^3-27}{2x-3} = \frac{T}{(x-\frac{3}{2})}$. What is T equal to?

(Hint: Factor 2 out of the denominator)

L) $4x^3 - \frac{27}{2}$

M) $4x^3-27$

θ) $4x^3-54$

P) $16x^3-54$

R) None of L), M), θ), and P).

(15-303T)

844 What is the beginning setup to do synthetic division for $\frac{4x^3 - \frac{27}{2}}{x-\frac{3}{2}}$?

S) $\begin{array}{r|rr} -\frac{3}{2} & 4 & -\frac{27}{2} \\ \hline & & \end{array}$

T) $\begin{array}{r|rrr} -\frac{3}{2} & 4 & 0 & -\frac{27}{2} \\ \hline & & & \end{array}$

U) $\begin{array}{r|rr} \frac{3}{2} & 4 & -\frac{27}{2} \\ \hline & & \end{array}$

W) $\begin{array}{r|rrr} \frac{3}{2} & 4 & 0 & -\frac{27}{2} \\ \hline & & & \end{array}$

X) None of S), T), U), and W).

(15-303 M)

845 What is the answer when $8x^3-27$ is divided by $2x-3$?

A) $4x^2-9$
B) $4x^2+9$
C) $4x^2-6x+9$
D) $4x^2+6x+9$
E) None of A), B), C), and D).

(15-303 B)

846 According to the remainder theorem, if $f(x)$ is a polynomial, then

F) $f(c)$ is the remainder when you divide by $x+c$.
G) $x-c$ is the remainder when you divide by c.
H) $x-f(c)$ is the remainder when you divide by $x-c$
J) $f(c)$ is the remainder when you divide by $x-c$.
K) None of F), G), H), and J).

(15-304B)

(847) $f(x) = 2x^5 - 25x^4 + 11x^3 + 14x^2 - 26x + 30$.

Consider the synthetic division below:

$$\left.\begin{array}{r|rrrrrr} 12 & 2 & -25 & 11 & 14 & -26 & 30 \\ & & 24 & -12 & -12 & 24 & -24 \\ \hline & 2 & -1 & -1 & 2 & -2 & \boxed{6} \end{array}\right\} \text{This involves } f(x)$$

$f(12) =$

L) 24
M) −1
O) 2
P) −2
R) 6
S) None of L), M), O), P), and R.

(15-305T)

(848) According to the factor theorem, if $f(x)$ is a polynomial, then

T) $x-c$ is a factor of $f(x)$ iff $f(c)=0$.
U) $x+c$ is a factor of $f(x)$ iff $f(c)=0$.
W) c is a factor of $f(x)$ iff $f(c)=0$.
X) $-c$ is a factor of $f(x)$ iff $f(c)=0$.
Z) None of T), U), W), and X).

(15-305B)

(849) True or False: $x-1$ is a factor of x^6-1.

T) True
F) False

(15-305 B)

(850) True or False: $x+1$ is a factor of $x^{10}+1$.

T) True

F) False

(15-306 B)

(851) True or False: All positive degree polynomials can be broken down into a product of linear factors over the complex numbers.

T) True

F) False

(16-309 B)

(852) For a system of 2 linear equations in 2 unknowns, if the lines that are their graphs intersect in exactly <u>one</u> point, then the linear system is

A) dependent

B) independent

C) inconsistent

D) conjugated

E) None of A), B), C), and D).

(16-309 B)

(853) True or False: A dependent systen of linear equations has infinitely many solutions.

T) True

F) False

(16-310)

⑧⑤④ What is the solution set for the linear system $\left\{ \begin{array}{l} 2x+3y=23 \\ 3x-4y=-8 \end{array} \right\}$?

F) $\{(x,y) \mid 5x-y=15\}$

G) $\{(0,\frac{23}{3})\}$

H) $\{(\frac{-8}{3},0)\}$

J) $\{(\frac{23}{2},0)\}$

K) None of F), G), H), and J)

(16-310T)

⑧⑤⑤ A way to eliminate x from the system

$$\left\{ \begin{array}{l} 2x+3y=23 \\ 3x-4y=-8 \end{array} \right\}$$

is to

L) multiply the first equation by 4 and the second equation by 3, then add.

M) multiply the first equation by -3 and the second equation by 2, then add.

O) multiply the first equation by 3 and the second equation by 2, then add

P) multiply the first equation by 4 and the second equation by -3, then add.

R) None of L), M), O), and P)

(16-310)

(856) In solving the system $\left\{ \begin{matrix} 2x+3y=23 \\ 3x-4y=18 \end{matrix} \right\}$, it is derived that $-17y=-85$. What is the value for x?

S) 5

T) There is no x value that works in both of these equations.

U) 4

W) 19

X) None of S), T), U), and W).

(16-311 T)

(857) For the system $\left\{ \begin{matrix} 3x+4y=2 \\ 6x+8y=-1 \end{matrix} \right\}$,

A) the solution set is $\{(0,\frac{1}{2})\}$

B) the solution set is $\{(-\frac{1}{6},0)\}$

C) the solution set is $\{\ \}$

D) the solution set is $\{(\frac{3}{2},0)\}$

E) None of A), B), C), and D).

(16-311 B)

(858) For the system $\left\{ \begin{matrix} 10x+4y=8 \\ 15x+6y=12 \end{matrix} \right\}$,

F) the solution set is $\{\ \}$

G) the solution set is $\{(0,2)\}$

H) the solution set is $\{(\frac{4}{5},0)\}$

J) the solution set is $\{(1,\frac{1}{2})\}$

K) None of F), G), H), and J).

(16-312T)

859 For the system $\begin{cases} 2x+3y=23 \\ 3x-4y=-8 \end{cases}$, to solve by the substitution method, the first equation can be solved for x and substituted into the second equation. Solving the first equation for x yields

L) $x = \frac{23+3y}{2}$

M) $x = \frac{-23+3y}{2}$

θ) $x = \frac{23-3y}{2}$

P) $x = -\frac{23-3y}{2}$

R) None of L), M), θ), and P).

(16-312M)

860 $3\left(\frac{23-3y}{2}\right)-4y=-8$. So $y=$

S) 4
T) 5
U) −5
W) −4
X) None of S), T), U), and W)

(16-313T)

(861) The system $\begin{Bmatrix} 3x+4y=2 \\ 6x+8y=-1 \end{Bmatrix}$ has

A) solution set $\{(4,5)\}$
B) solution set $\{(0,\frac{1}{2})\}$
C) solution set $\{(\frac{2}{3},0)\}$
D) no solution
E) None of A), B), C), and D).

(16-315T)

(862) For the equations $\begin{Bmatrix} 2x-5y+4z=11 \\ 3x+4y-2z=4 \end{Bmatrix}$,

to eliminate the variable x,

F) multiply the top equation by 3 and the bottom equation by 2 and add them together.
G) multiply the top equation by 3 and the bottom equation by -2 and add them together.
H) multiply the top equation by 2 and the bottom equation by -3 and add them together.
J) multiply the top equation by 4 and the bottom equation by 5 and add them together.
K) None of F), G), H), and J).

(16-315M)

(863) For the equations $\left\{\begin{matrix} 3x+4y-2z=4 \\ 5x-2y-4z=-4 \end{matrix}\right\}$,

when the top equation is multiplied by 5 and the bottom equation is multiplied by -3 and they are added together, the result is.

L) $26y+2z=32$

M) $2y-6z=0$

O) $14y-22z=8$

P) $-14y+22z=-8$

R) None of L), M), O), and P).

(16-315M)

(864) For the equations $\left\{\begin{matrix} 2x-5y+4z=11 \\ 3x+4y-2z=4 \end{matrix}\right\}$,

when the top equation is multiplied by 3 and the bottom equation is multiplied by -2 and they are added together, the result is.

S) $23y+16z=25$

T) $23y-16z=25$

U) $-23y+16z=-25$

W) $-23y+16z=25$

X) None of S), T), U), and W).

(16-316B)

(865) The graph of a linear equation in 3-unknowns is a

A) line
B) point
C) plane
D) parabola
E) None of A), B), C), and D).

(16-317 T, M)

(866) Which of the following is <u>not</u> a possibility for the intersection of 3-planes? Their intersection is a

F) point
G) line
H) plane
J) circle
K) the empty set, no point is on all 3 planes.
L) None of F), G), H), J), and K).

(16-317B, 318T)

(867) The solution to $\left\{\begin{array}{l} 4x-y-4z=11 \\ 4x-3y+4z=25 \end{array}\right\}$ is a

M) line
Θ) point
P) plane
R) empty set
S) None of M), Θ), P), and R)

(16-319, 320)

(868) The solution to $\left\{\begin{array}{l} 4x-y-4z=11 \\ 8x-3y-4z=29 \\ 4x-3y+4z=25 \end{array}\right\}$ is a

A) point
B) line
C) plane
D) empty set
E) None of A), B), C), and D)

(16-315, 316)

(869) The solution to $\left\{\begin{array}{l} 2x-5y+4z=11 \\ 3x+4y-2z=4 \\ 5x-2y-4z=-4 \end{array}\right\}$ is a

F) point
G) line
H) plane
J) empty set
K) None of F), G), H), and J).

(16-320B)

(870) The solution to $\left\{\begin{array}{c} x+y+z=1 \\ 2x+2y+2z=2 \\ 3x+3y+3z=3 \end{array}\right\}$ is a

L) point
M) line
O) plane
P) empty set
R) None of L), M), O), and P)

(16-321T)

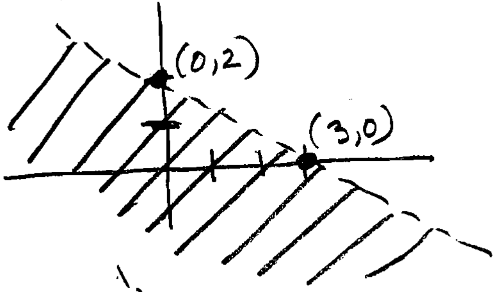
(871) The solution to $\left\{\begin{array}{l} 4x-y-4z=11 \\ 4x-2y=17 \\ 4x-3y+4z=25 \end{array}\right\}$ is a

S) point
T) line
U) plane
W) empty set
X) None of L), M), O), and P).

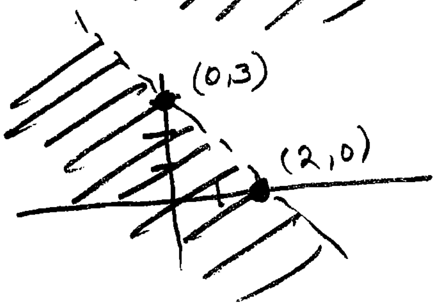
(16-323,324)

(872) Which of the following is the graph of $2x+3y=6$?

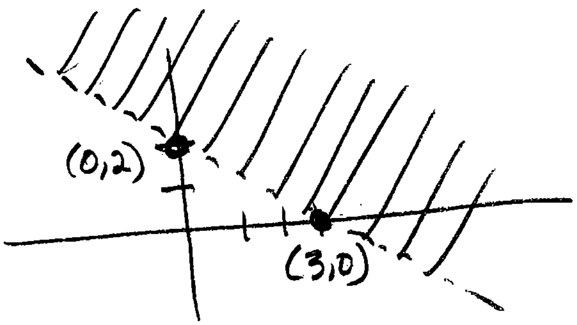
A)



B)



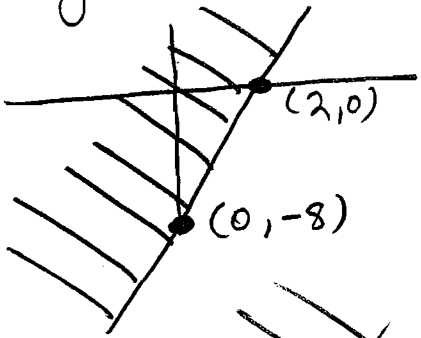
C)



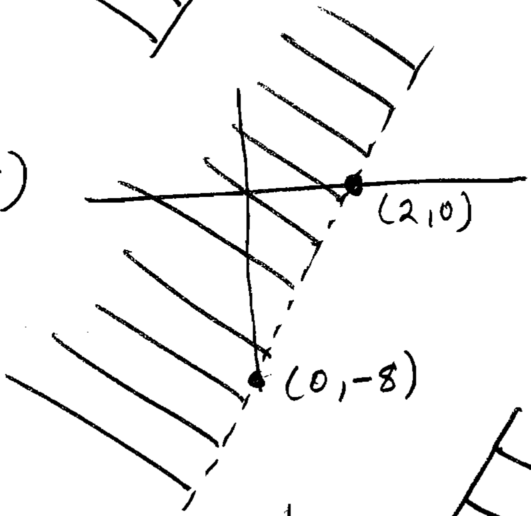
D) None of A), B), and C)

(873) Which of the following is the graph of $4x - y \leq 8$?

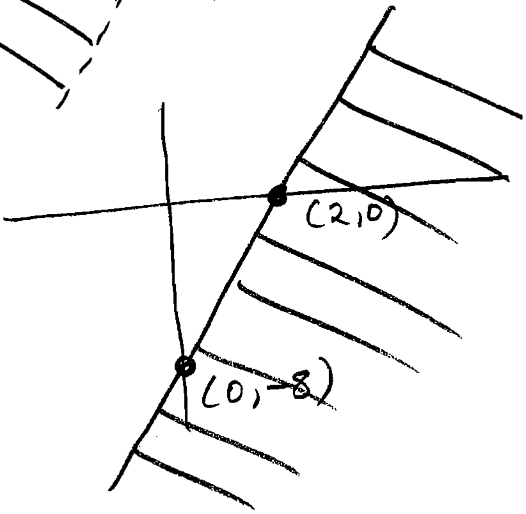
E)



F)



G)

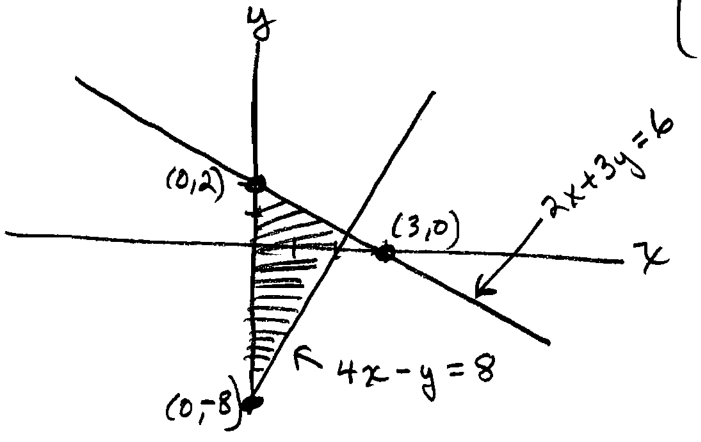


H) None of E), F), and G)

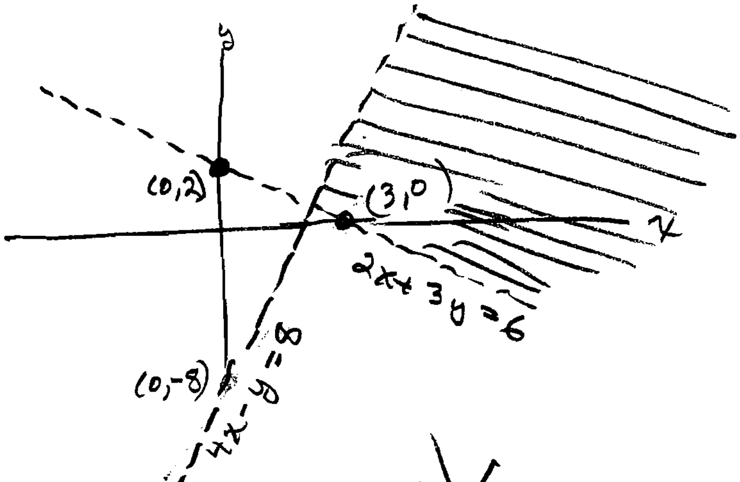
(16 - 324, 325, 326, 327)

⑧⑦④ The graph of the solution to $\left\{\begin{array}{c} 2x+3y > 6 \\ 4x-y \leq 8 \\ x \geq 0 \end{array}\right\}$ is

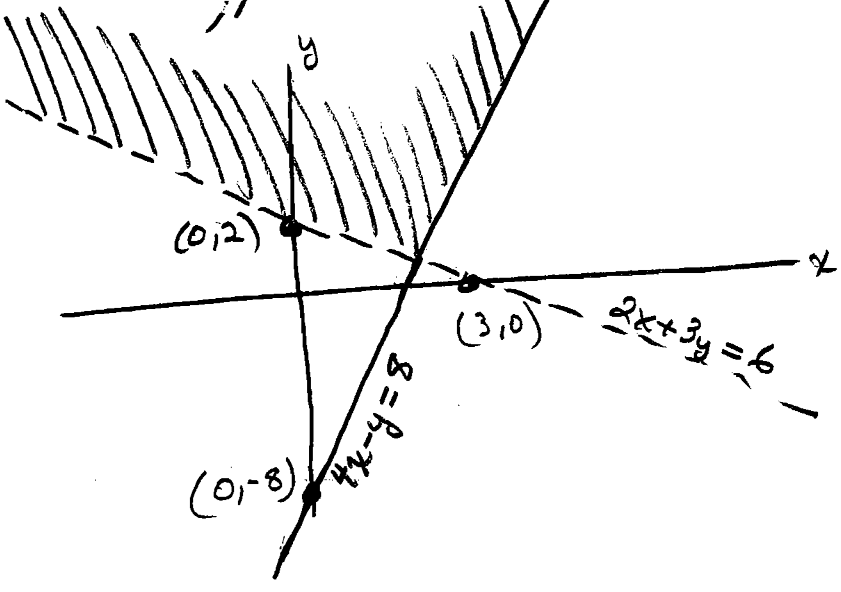
J)



K)



L)



M) None of these.

ANSWERS

TO

QUESTIONS

A1

ANSWERS

① c
② g
③ w
④ a
⑤ b
⑥ a
⑦ f
⑧ b
⑨ f
⑩ q
⑪ a
⑫ d
⑬ f
⑭ m
⑮ c
⑯ g
⑰ u
⑱ d
⑲ m
⑳ b
㉑ a
㉒ m
㉓ b
㉔ f
㉕ q
㉖ b
㉗ t
㉘ t
㉙ h
㉚ S
㉛ C
㉜ F
㉝ M
㉞ u
㉟ B
㊱. E
㊲ H
㊳ R
㊴. X
㊵ A

ANSWERS A2 (CONTINUED)

41	H
42	J
43	P
44	N
45	D
46	K
47	L
48	R
49	X
50	A
51	H
52	L
53	T
54	C
55	K
56	P
57	U
58	D
59	H
60	O
61	X
62	A
63	H
64	L
65	S
66	X
67	A
68	F
69	J
70	Q
71	S
72	D
73	G
74	L
75	R
76	T
77	D
78	T
79	G
80	P

A3

ANSWERS (CONTINUED)

81	S
82	F
83	W
84	C
85	F
86	K
87	P
88	W
89	B
90	H
91	M
92	Q
93	W
94	D
95	F
96	J
97	L
98	S
99	C
100	F
101	F
102	K
103	F
104	M
105	U
106	A
107	F
108	L
109	Q
110	W
111	A
112	F
113	M
114	T
115	X
116	C
117	F
118	K
119	θ
120	U

ANSWERS (CONTINUED)

121 A
122 G
123 L
124 R
125 W
126 A
127 D
128 G
129 M
130 Q
131 Z
132 B
133 G
134 M
135 S
136 W
137 C
138 E
139 K
140 S

141 U
142 C
143 G
144 L
145 T
146 B
147 F
148 L
149 T
150 X
151 C
152 G
153 T
154 J
155 R
156 T
157 D
158 H
159 L
160 T

A5

ANSWERS (CONTINUED)

161	D
162	H
163	O
164	A
165	G
166	L
167	Q
168	W
169	C
170	G
171	L
172	U
173	B
174	H
175	L
176	W
177	B
178	F
179	O
180	T
181	B
182	F
183	M
184	W
185	D
186	H
187	O
188	W
189	A
190	L
191	P
192	T
193	C
194	G
195	Q
196	T
197	T
198	B
199	F
200	M

ANSWERS (CONTINUED)

201	R
202	X
203	D
204	F
205	M
206	R
207	A
208	H
209	M
210	F
211	F
212	T
213	R
214	B
215	F
216	P
217	U
218	C
219	A
220	H
221	M
222	S
223	A
224	F
225	P
226	T
227	T
228	F
229	B
230	F
231	M
232	R
233	U
234	B
235	D
236	M
237	F
238	R
239	D
240	H

ANSWERS (CONTINUED)

241	M
242	S
243	B
244	H
245	F
246	K
247	S
248	A
249	G
250	K
251	P
252	U
253	A
254	F
255	L
256	N
257	U
258	B
259	G
260	M
261	S
262	B
263	E
264	Q
265	S
266	B
267	H
268	M
269	T
270	C
271	G
272	M
273	R
274	E
275	H
276	R
277	W
278	C
279	G
280	K

A8

ANSWERS (CONTINUED)

281	U
282	D
283	G
284	O
285	U
286	A
287	E
288	J
289	R
290	T
291	A
292	H
293	M
294	R
295	C
296	L
297	N
298	C
299	K
300	R
301	W
302	D
303	H
304	L
305	T
306	E
307	G
308	R
309	U
310	A
311	F
312	L
313	Q
314	T
315	D
316	K
317	O
318	S
319	B
320	J

ANSWERS (CONTINUED)

321	M
322	W
323	A
324	G
325	O
326	U
327	C
328	N
329	K
330	T
331	A
332	H
333	M
334	F
335	L
336	S
337	T
338	E
339	H
340	P
341	S
342	D
343	J
344	P
345	X
346	C
347	F
348	R
349	D
350	F
351	P
352	U
353	C
354	G
355	L
356	S
357	D
358	K
359	R
360	X

A10
ANSWERS (CONTINUED)

361 D
362 H
363 L
364 T
365 D
366 F
367 M
368 Q
369 X
370 B
371 G
372 K
373 T
374 D
375 F
376 O
377 U
378 D
379 H
380 M

381 T
382 Z
383 A
384 T
385 T
386 F
387 L
388 N
389 T
390 F
391 T
392 X
393 D
394 T
395 F
396 E
397 L
398 T
399 T
400 T

ANSWERS (CONTINUED)

401 B
402 F
403 F
404 T
405 P
406 S
407 T
408 F
409 Z
410 C
411 F
412 F
413 F
414 K
415 P
416 Z
417 F
418 T
419 T
420 T

421 C
422 H
423 K
424 N
425 R
426 U
427 A
428 H
429 P
430 U
431 A
432 G
433 M
434 Q
435 X
436 F
437 C
438 H
439 M
440 U

ANSWERS (CONTINUED)

441	A
442	J
443	O
444	W
445	D
446	F
447	L
448	T
449	C
450	K
451	M
452	X
453	E
454	K
455	R
456	W
457	D
458	J
459	R
460	U
461	C
462	J
463	O
464	S
465	D
466	H
467	K
468	R
469	X
470	A
471	G
472	T
473	T
474	L
475	P
476	W
477	B
478	H
479	N
480	Y

A13

ANSWERS (CONTINUED)

481	P
482	U
483	B
484	Y
485	Y
486	H
487	P
488	T
489	E
490	H
491	T
492	T
493	M
494	S
495	B
496	F
497	L
498	U
499	D
500	F
501	M
502	S
503	C
504	F
505	L
506	R
507	C
508	E
509	M
510	R
511	Z
512	C
513	H
514	P
515	T
516	F
517	U
518	A
519	H
520	θ

A14

ANSWERS (CONTINUED)

521	R	541	B
522	C	542	H
523	F	543	K
524	S	544	P
525	X	545	W
526	E	546	A
527	H	547	F
528	R	548	M
529	U	549	Q
530	B	550	B
531	A	551	J
532	D	552	L
533	J	553	T
534	Q	554	C
535	X	555	G
536	C	556	L
537	A	557	Q
538	J	558	X
539	O	559	B
540	S	560	E

A15

ANSWERS (CONTINUED)

561	L	581	H
562	Q	582	C
563	W	583	A
564	C	584	P
565	H	585	X
566	P	586	C
567	S	587	J
568	B	588	P
569	G	589	X
570	M	590	B
571	U	591	K
572	A	592	Q
573	H	593	U
574	O	594	C
575	U	595	H
576	D	596	M
577	K	597	T
578	L	598	F
579	T	599	K
580	A	600	U

ANSWERS (CONTINUED)

601	D
602	H
603	O
604	T
605	D
606	E
607	O
608	Q
609	U
610	T
611	T
612	F
613	T
614	A
615	G
616	O
617	W
618	A
619	H
620	M
621	R
622	Z
623	A
624	T
625	H
626	L
627	T
628	W
629	E
630	H
631	L
632	R
633	D
634	K
635	M
636	S
637	C
638	F
639	P
640	F

ANSWERS (CONTINUED)

641	F	661	B
642	T	662	H
643	F	663	L
644	U	664	P
645	N	665	W
646	N	666	C
647	Y	667	D
648	Y	668	J
649	C	669	J
650	G	670	M
651	O	671	R
652	T	672	C
653	A	673	H
654	F	674	M
655	O	675	U
656	U	676	A
657	D	677	F
658	H	678	L
659	O	679	C
660	U	680	F

ANSWERS (CONTINUED)

681	K
682	M
683	T
684	T
685	D
686	B
687	E
688	M
689	S
690	U
691	B
692	G
693	L
694	S
695	B
696	F
697	T
698	H
699	T
700	M
701	T
702	N
703	C
704	G
705	L
706	R
707	W
708	C
709	G
710	R
711	D
712	H
713	M
714	Q
715	B
716	F
717	R
718	U
719	C
720	G

A19

ANSWERS (CONTINUED)

721	O	741	L
722	S	742	U
723	B	743	B
724	H	744	G
725	L	745	J
726	R	746	R
727	B	747	X
728	H	748	B
729	L	749	D
730	Q	750	F
731	C	751	T
732	G	752	G
733	O	753	M
734	R	754	N
735	A	755	T
736	J	756	C
737	M	757	G
738	U	758	L
739	C	759	S
740	G	760	U

A20

ANSWERS (CONTINUED)

761	D
762	G
763	K
764	P
765	S
766	D
767	K
768	O
769	R
770	F
771	G
772	P
773	T
774	C
775	G
776	O
777	R
778	A
779	F
780	P
781	S
782	B
783	J
784	M
785	R
786	A
787	K
788	M
789	T
790	C
791	H
792	L
793	U
794	D
795	H
796	P
797	U
798	B
799	F
800	M

ANSWERS (CONTINUED)

801	U
802	A
803	G
804	O
805	S
806	C
807	F
808	K
809	F
810	T
811	Q
812	W
813	A
814	H
815	O
816	W
817	B
818	F
819	O
820	U
821	C
822	G
823	K
824	R
825	A
826	H
827	K
828	R
829	F
830	T
831	U
832	C
833	F
834	F
835	O
836	T
837	B
838	E
839	O
840	S

ANSWERS (CONTINUED)

841	C
842	G
843	L
844	X
845	D
846	J
847	R
848	T
849	T
850	F
851	T
852	B
853	T
854	K
855	M
856	U
857	C
858	K
859	θ
860	T
861	D
862	G
863	L
864	W
865	C
866	J
867	M
868	B
869	F
870	θ
871	W
872	C
873	E
874	M

PART II

MULTIPLE CHOICE QUESTIONS THAT COME EXACTLY FROM SUPPLEMENTARY MATERIALS FOR ALGEBRA BY HEART (THIS BOOK CONTAINS WORKED HOMEWORK ASSIGNED IN ALGEBRA BY HEART)

(S1) (HW-1, M) Write $\{x \mid x \in W \text{ and } x < 2\}$ by the listing method.

a. $\{\ldots, -1, 0, 1\}$

b. $\{\ldots, -1, 0, 2\}$

c. $\{0, 1, 2\}$

d. $\{0, 1\}$

e. $\{1\}$

f. None of these

(S2) (HW-2, T) Write $32.3\overline{14} = 32.3141414\ldots$ as a fraction of integers.

f. $\frac{31991}{99}$

g. $\frac{31991}{990}$

h. $\frac{32314}{1000}$

i. $\frac{32314}{100}$

j. None of these

(S3) (HW-2, B) π is a member of which sets

k. Ir and R

l. Q and Ir

m Q, Ir, and R

n I, Ir, and R

o None of these

SM 2.

(S4) (HW-3, B) TRUE OR FALSE: $\sqrt{2} \in I_r$

t. TRUE
f. FALSE

(S5) (HW-3, B) TRUE OR FALSE: $\{3\} \subseteq \{1, 2, 3\}$

t. TRUE
f. FALSE.

(S6) (HW-4, T) $H = \{3, 4, 7\}$ $K = \{5, 6, 7, 8\}$. $H \cap K =$

p. $\{3, 4, 5, 6, 7\}$
q. $\{7\}$
r. ϕ ← empty set
s. None of these.

(S7) (HW-4, B) State completely the property:

$$5\left(x(mn)+3\right) = 5\left((xm)n+3\right)$$

t. associative property of multiplication.
v. associative property of addition.
w. distributive property
x. commutative property of multiplication
y. commutative property of addition
z. None of these.

(S8) (HW-5) What is the multiplicative inverse of $.121212\ldots = .\overline{12}$

a) $\frac{100}{12}$
b) $\frac{12}{100}$
c) $\frac{33}{4}$
d) $\frac{4}{33}$
e) None of these

SM3

S9 (HW-6, T). $\frac{p-q}{q-p} =$

f. 1
g. -1
h. $\frac{0}{0}$
i. none of these

S10 (HW-6, M) Given $z > 5$ and $w < -3$
$z - w$ is

j. $5-(-3)$
k. $5-3$
l positive
m. negative
p. none of these.

S11 (HW-6, M) Given $z > 5$ and $w < -3$
$|-3zw| =$

q. $3zw$
r. $-3zw$
s. $(-3)(5)(-3)$
N. None of these

S12 (HW-7, T) $5-6 \div 2 \cdot 4 =$

t. 7
w. -2
x. $\frac{-1}{8}$
N. None of these

SM4

S13 (HW-8, T) $\dfrac{4(x-2y)+7y}{3(2x-6y)+19y-10x} =$

a. $\dfrac{4x-2y+7y}{6x-6y+19y-10x}$

b. $\dfrac{4x-8y+7y}{6x-18y+19y-10x}$

c. $\dfrac{4x+2y+7y}{5x-3y+19y-10x}$

N. None of these

S14 (HW-8, B) No negative exponents. $\left(\dfrac{5x^{-2}y^{3}}{15x^{5}y^{-7}}\right)^{4} =$

d. $\dfrac{y^{10}}{3x^{7}}$

e. $\dfrac{y^{10}x^{-7}}{3}$

f. $\dfrac{y^{40}}{81x^{28}}$

g. $\dfrac{y^{14}}{81x^{11}}$

N. None of these.

sm5

(S15) (HW-9, T) $\left(\frac{5x^4y^{-7}}{125x^{-3}y^{10}}\right)^3 =$

h. $5^{-2}x^{21}y^{-51}$

l. $5^{-2}x^{7}y^{-17}$

p. $5^{-6}x^{21}y^{-51}$

N. None of these

(S16) (HW-9, B) $\left(\frac{3x^6y^5}{81x^{-5}y^{10}}\right)^4 =$

R. $3^{12}x^{44}y^{-20}$

S. $3^{-3}x^{11}y^{-5}$

T $3^{1}x^{15}y^{-1}$

W. $3^{-12}x^{44}y^{-20}$

N. None of these

(S17) (HW-10, T) .00021 in scientific notation is

P. 2.1

Q. 2.1×10^{4}

R. 2.1×10^{3}

S. 2.1×10^{-3}

N. None of these

SM6

S18 (HW-10, B) $16^{-\frac{1}{4}} =$

T. 4
U. -4
X. 2
W. $\frac{1}{2}$
N. None of these

S19 (HW-11, T) $(-8)^{-\frac{5}{3}} =$

Q. $\frac{1}{(-8)^{5/3}}$
P. $\frac{1}{8^{5/3}}$
R. $\frac{40}{3}$
N. None of these

S20 (HW-11, B) $\sqrt{m^2}$ is always equal to

S. m
T. $|m|$
N. None of these

SM 7

S21 (HW-11, B) For all real numbers, $\sqrt[6]{x^{18}}$ is always

W. $|x^3|$

X. x^3

Y. x^{12}

N. None of these.

S22 (HW-12, T, M) Suppose $x<0$ and $y>0$. Which of the following is true?

A. $\sqrt{-xy} = \sqrt{x}\,\sqrt{-y}$

B. $\sqrt{-xy} = \sqrt{-x}\,\sqrt{y}$

C. $\sqrt{-xy} = -\sqrt{xy}$

N. None of these

S23 (HW-13, T) $\frac{2}{x} - 5 =$

D. $\frac{2-5}{x}$

E. $\frac{2-5x}{x}$

F. $2x-5$

G. $\frac{2}{x} - \frac{5}{x}$

N. None of these

Sm 8

S24 (HW-14, M) $\frac{5}{\sqrt{8xy}}$ in simplied form is: $(x>0$ and $y>0)$

H. $\frac{5\sqrt{8xy}}{8xy}$

J. $\frac{5}{\sqrt{8}\sqrt{x}\sqrt{y}}$

P. $\frac{5\sqrt{2xy}}{4xy}$

N. None of these

S25 (HW-15, T) Which is true to fill in the blank with?

$$\frac{3x\sqrt[4]{y^3}}{\sqrt[4]{2^5x^5y^{10}}} \cdot \underline{\hspace{3cm}} = \frac{3x\sqrt[4]{2^3x^3y^5}}{\sqrt[4]{2^8x^8y^{12}}}$$

R. $\frac{\sqrt{2^5x^5y^{10}}}{\sqrt{2^5x^5y^{10}}}$

S. $\frac{\sqrt{2^3x^3y^2}}{\sqrt{2^3x^3y^2}}$

T. $\frac{\sqrt[4]{2^3x^3y^2}}{\sqrt[4]{2^3x^3y^2}}$

N. None of these

SM 9

S26 (HW-16, T) $\sqrt{75} - \sqrt{27} + \sqrt{3} =$

W. $\sqrt{75-27+3}$

X. $25\sqrt{3} - 9\sqrt{3} + \sqrt{3}$

Z. $\sqrt{25 \cdot 3} - \sqrt{9 \cdot 3} + \sqrt{3}$

N. None of these

S27 (HW-16, B) For $x>0$, $\sqrt{x^7 y}$ = (also $y>0$)

A. $x^6\sqrt{xy}$
B. $-x^6\sqrt{xy}$
C $x^3\sqrt{x}\sqrt{y}$
D. $-x^3\sqrt{x}\sqrt{y}$
N. None of these

S28 (HW-17, T) Give an example of a quadratic trinomial

F. $2x^2-3x+7$

G. $4x^3+7x^2+3$

H. $5x^4+2x-7$

I. $4x^3+3x^2+2x+7$

J None of these.

SM-10

S29 (HW-17, B) $(\sqrt{x}+x)^2=$

K. $x+2x\sqrt{x}+x^2$

L. $|x|+2|x|\sqrt{x}+x^2$

M. $x+x^2$

N. None of these

S30 (HW-18, T) $(4x^3-2x+3)(5x^2-2x+4)=$

P. $(4x^3)(5x^2)-(2x)(-2x)+3(4)$

Q. $9x^5+4x^2+12$

R. $(4x^3-2x+3)(5x^2)+(4x^3-2x+3)(-2x)+(4x^3-2x+3)(4)$

T. $9x^6+4x^2+12$

N. None of these.

S31 (HW-18, B) $25x^4-49=$

A. $(5x^2-7)^2$

B. $(5x^2+7)^2$

C. $(5x^2-49)(5x^2+49)$

D. $(25x^2-7)(25x^2+7)$

N. None of these

SM-11

(S32) (HW-19, T) The first step in rationalizing the denominator in $\frac{2+\sqrt{3}}{\sqrt{5}+\sqrt{2}}$ is

F. $\frac{2+\sqrt{3}}{\sqrt{5}+\sqrt{2}} \cdot \frac{1}{\sqrt{5}-\sqrt{2}}$

G. $\frac{2+\sqrt{3}}{\sqrt{5}+\sqrt{2}} \cdot \frac{\sqrt{5}+\sqrt{2}}{\sqrt{5}+\sqrt{2}}$

H. $\frac{(2+\sqrt{3})^2}{(\sqrt{5}+\sqrt{2})^2}$

I. $\frac{2+\sqrt{3}}{\sqrt{5}+\sqrt{2}} \cdot \frac{\sqrt{5}-\sqrt{2}}{\sqrt{5}-\sqrt{2}}$

N. None of these

(S33) (HW-20, B) The 1^{ST} term, $\boxed{}$, filled in the long division process is

$$\begin{array}{r} \boxed{} \qquad\qquad\qquad\qquad \\ 2x^2+3 \,\overline{\big)\, 3x^3+5x^2+\frac{9}{2}x+\frac{15}{2}} \end{array}$$

K. x

L. $\frac{3}{2}x$

M. $\frac{3}{2}$

N. None of these

SM-12

S34 (HW-22, T) $12\sqrt{x}+6x^3+2x=$

P. $2x^{1/2}(10+3x^{3/2}+x^{1/4})$

Q. $2x^{1/2}(6+3x^{5/2}+2x^{1/2})$

R. $2x^{1/2}(6+3x^{5/2}+x^{1/2})$

N. None of these

S35 (HW 22, M) $x^2(x^2+5)-(x^2+5)=$

S. $(x^2+5)(x^2-1)$

T. x^2-1+x^2+5

U. $x^2(x^2+5)$

W. $x^2-(x^2+5)$

N. None of these

S36 (HW-22, B) $pq^2+2p^2q+3q+6p=$ $pq(\underline{\quad\quad})+3(\underline{\quad\quad})$. Fill in the blanks with the same value

A. $p+2q$

B. $p+q$

C. $q+p^2$

D. $q+2p$

N. None of these

SM-13

S37 (HW-23) $3x^2 - x - 10$ factors into

F. $(3x+10)(x+1)$

G. $(3x+1)(x-10)$

H. $(3x-1)(x+10)$

J. $(x+2)(3x-5)$

N. None of these

S38 (HW-24, T) $5x^2 + x + 7$

K. factors into $(x+1)(5x+7)$

L. factors into $(5x+1)(x+7)$

M. factors into $(5x+1)(x+1)$

P. Is irreducible over the integers

N. None of these.

S39 (HW-24, B) $-8x^2 + 19x + 15$ factors into

Q. $(-8x-5)(x+3)$

R. $(8x+5)(x-3)$

S. $-(8x+5)(x+3)$

T. $(8x+5)(-x+3)$

N. None of these

SM-14

S40 (HW-25, T) One of the first steps to factoring $4x^2-16x+15$ by the reduce to "group, then factor" method is to find 2 numbers whose

A. whose sum is 4 and whose product is 60.

B. whose sum is −16 and whose product is 60.

C. whose sum is 15 and whose product is 60.

N. None of these.

S41 (HW-25, M) $4x^2-6x-10x+15=$

D. $(4x^2-6x)-(10x+15)$

E. $(4x^2-6x)-(10x-15)$

F. $(4x^2-6x)+(10x-15)$

G. $(4x^2-6x)-(-10x+15)$

N. None of these.

S42 (HW 25, B) $a^2b^4-9=$

H. $(ab^2-3)(ab^2+3)$

K. $(ab^2-3)^2$

L. $(ab^2+3)^2$

m $(a^2b^4-3)(a^2b^4+3)$

N. None of these

sm-15

S43 (HW-25, B) $27x^6y^3 - 125$

P. $(9x^3y - 5)(3x^3y^2 + 25)$

Q $(9x^3y + 5)(3x^3y^2 - 25)$

R. $(3x^2y - 5)((3x^2y)^2 - (3x^2y)5 + 5^2)$

S. $(3x^2y - 5)((3x^2y)^2 + (3x^2y)5 + 5^2)$

N. None of these.

S44 (HW-26, M) $(a-b)^3 =$

T. $a^3 + 3a^2b + 3ab^2 + b^3$

W. $a^3 - a^2b + ab^2 - b^3$

X. $a^3 - 3a^2b + 3ab^2 - b^3$

Z. $a^3 - 3a^2b - 3ab^2 - b^3$

N. None of these.

S45 (HW-26, M) $8x^3 - 36x^2 + 54x - 27 =$

A. $(8x - 27)^3$

B. $(8x)^3 - 27^3$

C. $(2x - 3)^3$

D. $(2x)^3 - 3^3$

E. $(8x - 3)^3$

N. None of these.

Sm-16

(S46) (HW-26B) $a^3+3a^2b+3ab^2+b^3=$

F. $(a+b)^3$
G. $(a-b)^3$
H. $(a-b)(a^2+b^3)$
J. $(a^2-b^2)(a+b)$
N. None of these.

(S47) Factor COMPLETELY: $x^{12}-1=$

P. $(x^6-1)(x^6+1)$
Q. $(x^3-1)(x^3+1)(x^6+1)$
R. $(x-1)(x^2+x+1)(x+1)(x^2-x+1)(x^6+1)$
N. None of these

(S48) $x^4-5x^3-5x^2+45x-36$ factors into $(x^2-9)($__________$)$. Fill in the blank.
Hint: long division can be used.

S. x^2+5x+4

T. x^2-5x-4

W. x^2+5x-4

X. x^2-5x+4

N. None of these

S49 (HW-29T) Reduce to lowest terms:

$$\frac{x^3-8}{x^2-x-2} \div \frac{x^2+2x+4}{x^3+1} =$$

A. $\frac{x^2+2x+4}{x-1}$

B. $\frac{x-2}{x^2+x+1}$

C. x^2-x+1

D. x^2+x-1

E. x^2-x-1

N. None of these.

S50 $\frac{x^3+3x^2+3x+1}{x^2-1} \div \frac{x^4+x^3+x+1}{2x-2} =$ (HW-29M)

F. $\frac{(x+1)^3}{(x-1)(x+1)} \div \frac{2(x-1)}{(x^4+x^3)+(x+1)}$

G. $\frac{(x+1)^3}{(x-1)(x+1)} \cdot \frac{2(x-1)}{x^3(x+1)-(x-1)}$

H. $\frac{(x+1)^3}{(x-1)(x+1)} \cdot \frac{2(x-1)}{x^3(x+1)+(x+1)}$

N. None of these

(S51) (HW-30, M) $\text{lcm}\left(x^3y^5z^4, x^6y^2, xy^{10}z^5\right) =$

J. x^6y^{10}

K. $x^3y^{10}z^5$

L. $x^3y^2z^4$

N. None of these

(S52) (HW-30, B) $\dfrac{5}{(x-3)(x-4)} + \dfrac{4}{(x-3)^2} =$

P. $\dfrac{5+4}{(x-3)^2(x-4)}$

Q. $\dfrac{5(x-4)}{(x-3)^2(x-4)} + \dfrac{4(x-3)}{(x-3)^2(x-4)}$

R. $\dfrac{5(x-3)+4}{(x-3)^2(x-4)}$

S. $\dfrac{5(x-3)}{(x-3)^2(x-4)} + \dfrac{4(x-4)}{(x-3)^2(x-4)}$

N. None of these

(S53) (HW-31, T) $\dfrac{5-\dfrac{2}{x+4}}{\dfrac{3}{x+2}+\dfrac{4}{x-1}} =$

T. $\dfrac{\dfrac{5-2}{x+4}}{\dfrac{3+4}{(x+2)+(x-1)}}$

U. $\dfrac{\dfrac{5-2}{x+4}}{\dfrac{3+4}{(x+2)(x-1)}}$

W. $\dfrac{\dfrac{5(x+4)-2}{x+4}}{\dfrac{3(x-1)+4(x+2)}{(x+2)(x-1)}}$

X. $\dfrac{\dfrac{5(x+4)-2}{x+4}}{\dfrac{3(x+2)+4(x-1)}{(x+2)(x-1)}}$

N. None of these

(S54) (HW-31, B)
$$\frac{\frac{1}{x^2}+\frac{1}{y^2}}{\frac{1}{x}-\frac{1}{y}} \cdot \frac{\frac{1}{y^2}-\frac{1}{x^2}}{x^2+y^2} =$$

A. $$\frac{\frac{y^2+x^2}{x^2y^2}}{\frac{y-x}{xy}} \cdot \frac{\frac{x^2-y^2}{x^2y^2}}{\frac{x^2+y^2}{1}}$$

B. $$\frac{\frac{y^2+x^2}{x^2+y^2}}{\frac{y-x}{x-y}} \cdot \frac{\frac{x^2-y^2}{y^2+x^2}}{\frac{x^2+y^2}{1}}$$

C. $$\frac{\frac{1}{x^2}+\frac{1}{y^2}}{\frac{1}{x}-\frac{1}{y}} \cdot \frac{x^2+y^2}{\frac{1}{y^2}-\frac{1}{x^2}}$$

D. $$\frac{\frac{\frac{1}{y^2}-\frac{1}{x^2}}{x^2y^2}}{\frac{\frac{1}{y}-\frac{1}{x}}{xy}} \cdot \frac{\frac{\frac{1}{x^2}-\frac{1}{y^2}}{x^2y^2}}{\frac{x^2}{1}+\frac{y^2}{1}}$$

N. None of these

SM-21

S55 (HW-31, B) $\dfrac{x^{-2}+y^{-2}}{x^{-1}-y^{-1}} \cdot \dfrac{y^{-2}-x^{-2}}{x^{2}+y^{2}} =$

E. $\dfrac{\frac{1}{x^{-2}}+\frac{1}{y^{-2}}}{\frac{1}{x^{-1}}-\frac{1}{y^{-1}}} \cdot \dfrac{\frac{1}{y^{-2}}-\frac{1}{x^{-2}}}{x^{2}+y^{2}}$

F. $\dfrac{x^{1}-y^{1}}{x^{2}+y^{2}} \cdot \dfrac{x^{-2}+y^{-2}}{y^{2}-x^{2}}$

G. $\dfrac{\frac{1}{x^{2}}+\frac{1}{y^{2}}}{\frac{1}{x}-\frac{1}{y}} \cdot \dfrac{\frac{1}{y^{2}}-\frac{1}{x^{2}}}{\frac{1}{x^{2}}+\frac{1}{y^{2}}}$

H. $\dfrac{\frac{1}{x^{2}}+\frac{1}{y^{2}}}{\frac{1}{x}-\frac{1}{y}} \cdot \dfrac{\frac{1}{y^{2}}-\frac{1}{x^{2}}}{x^{2}+y^{2}}$

N. None of these.

(S56) (HW-32T) $\dfrac{x^2-y^2}{(y-x)x^3y^3} =$

J. $\dfrac{(x-y)^2}{(x-y)x^3y^3}$

K. $\dfrac{(x-y)(x+y)}{-(x-y)x^3y^3}$

L. $\dfrac{(x-y)(x+y)}{(x-y)x^3y^3}$

N. None of these.

(S57) (HW-32, m) $\dfrac{x^{-3}-y^{-3}}{x^{-1}+y^{-1}} \cdot \dfrac{y^{-2}-x^{-2}}{x^2+xy+y^2} =$

M. $\dfrac{\frac{1}{x^3}-\frac{1}{y^3}}{\frac{1}{x}+\frac{1}{y}} \cdot \dfrac{\frac{1}{y^2}-\frac{1}{x^2}}{\frac{x^2+xy+y^2}{1}}$

P. $\dfrac{x+y}{x^3-y^3} \cdot \dfrac{x^{-2}+x^{-1}y^{-1}+y^{-2}}{y^2-x^2}$

Q. $(x^{-3}-y^{-3})(x+y)(y^{-2}-x^{-2})(x^{-2}+x^{-1}y^{-1}+y^{-2})$

R. None of these

(S58) (HW-32B)

$$\frac{(y-x)(y^2+xy+x^2)}{x^3y^3} \cdot \frac{xy}{y+x} \cdot \frac{(x-y)(x+y)}{x^2y^2} \cdot \frac{1}{x^2+xy+y^2} =$$

S. $\frac{(x-y)^2}{x^4y^4}$

T. $\frac{(y-x)(x-y)}{x^4y^4}$

U. $\frac{(x-y)^2}{x^5y^5}$

X. None of these

(S59) (HW-33,B) $i^{34} =$

A. 1

B. -1

C. i

D. $-i$

E. None of these

S60 (HW-33, B) $(a+bi)(a-bi) =$

F. a^2-b^2

G. $a^2+b^2i^2$

H. a^2i+b^2i

J. None of these

S61 (HW-34, T) $(2+3i)(5-4i)(6-2i) =$

K. $[10-8i+15i-12i^2](6-2i)$

L. $[10-12i^2](6-2i)$

M. $[10-12i](6-2i)$

P. None of these

S62 (HW-34, M) $\overline{(3-2i)\cdot(\overline{4-3i}+5-6i)} =$

Q. $\overline{(3-2i)(9+3i)}$

R. $\overline{(3-2i)(1-3i)}$

S. $\overline{(3-2i)(9-3i)}$

T. $\overline{(3-2i)(9-3i^2)}$

X. None of these

S63 (HW-34, B) $\overline{27-9i-18i+6i^2} =$

A. $21+27i$
B. $21-27i$
C $-21+27i$
D. $-21-27i$
E. None of these.

S64 (HW-35, M) To put $\dfrac{\frac{1}{2}-\frac{2}{3}i}{\frac{1}{5}+\frac{1}{6}i}$ in $a+bi$ form,

multiply by

F. $\dfrac{\frac{1}{5}+\frac{1}{6}i}{\frac{1}{5}+\frac{1}{6}i}$

G. $\dfrac{1}{\frac{1}{5}-\frac{1}{6}i}$

H. $\dfrac{\frac{1}{5}-\frac{1}{6}i}{\frac{1}{5}-\frac{1}{6}i}$

J. $\dfrac{1}{\frac{1}{5}+\frac{1}{6}i}$

K. None of these

SM-26

S65 (HW-36) $\dfrac{\sqrt{5}+i\sqrt{6}}{\sqrt{3}+i\sqrt{2}}$ put in a+bi form is

L. $\dfrac{\sqrt{15}+2\sqrt{3}}{5}+\dfrac{(-\sqrt{10}+3\sqrt{2})}{5}i$

M. $\dfrac{\sqrt{15}-2\sqrt{3}}{5}-\dfrac{(\sqrt{10}+3\sqrt{2})}{5}i$

P. $\dfrac{\sqrt{15}+2\sqrt{3}}{5}-\dfrac{(\sqrt{10}+3\sqrt{2})}{5}i$

Q. None of these

S66 (HW-37,T) $\sqrt{-6}=$

R. $-\sqrt{6}$
S. $i\sqrt{6}$
T. $\sqrt{6i}$
X. None of these

S67 (HW-37, B) $\left(\dfrac{-1+i\sqrt{3}}{2}\right)^2=$

A. $\dfrac{-1-2i\sqrt{3}+i^2 3}{2}$

B. $\dfrac{-1-2i\sqrt{3}+i3}{4}$

C. None of these

S68 (HW-39, M) For the reals, $x^2+6=-4$

E. is an inconsistent equation.
F. is an identity.
G. is a conditional equation.
H. None of these.

S69 (HW-39, M) What number satisfies $x^2=9$ that does not satisfy $x=3$?

J. $3i$
K. $-3i$
L. -3
M. None of these.

S70 (HW-39-40 B, T) What is the solution set for $5\left(2x-\frac{3}{4}\right)+\frac{1}{3}=\frac{2}{3}\left(5x-\frac{1}{7}\right)$?

N. $\left\{\frac{20}{3} . \frac{279}{84}\right\}$
P. $\left\{\frac{279}{1680}\right\}$
Q. $\left\{\frac{279}{560}\right\}$
R. $\left\{\frac{837}{560}\right\}$
S. None of these

S71 (HW-40, B) $\frac{2}{3}\left(\frac{7x-p}{\frac{2}{3}x^2+2/3}\right) =$

T. $\frac{\frac{2}{3}}{1}\left(\frac{7x-p}{\frac{2}{3}(x^2+1)}\right)$

U $\frac{\frac{2}{3}}{2/3}\left(\frac{7x-p}{x^2+2/3}\right)$

W. $2/3\left(\frac{7x-p}{x^2+2/3}\right)$

X. None of these.

S72 (HW-40, B) What is the solution set for

$$\frac{5x-2}{x^2+1} = \frac{2}{3}\left(\frac{7x-p}{\frac{2}{3}x^2+\frac{2}{3}}\right) \quad ?$$

A. $\left\{\frac{2-p}{p}\right\}$

B. $\left\{\frac{p-2}{2}\right\}$

C. $\left\{\frac{p-2}{p}\right\}$

D. $\left\{\frac{2-p}{2}\right\}$

E. None of these

S73 (HW-41, T) What is the solution set for

$$\frac{x}{x+5} + 3 = \frac{-5}{x+5} \quad ?$$

F. $\{5\}$
G. $\{-5\}$
H. $\{\ \}$
J. $\{-3\}$
K. None of these.

S74 (HW-41, B) What is the solution set for

$$\frac{2}{3x-2} - \frac{4}{x+1} = \frac{3x+1}{3x^2+x-2}$$

L. $\left\{\frac{260}{11}\right\}$

M. $\left\{\frac{13}{9}\right\}$

P. $\left\{\frac{9}{13}\right\}$

Q. $\left\{\frac{11}{260}\right\}$

R. $\{\ \}$

S. None of these

SM-30

ⓢ75 (HW-44, T) what is the solution set for
$(x+5)^2=7$?

T. $\{-5+\sqrt{7}, -5-\sqrt{7}\}$
U. $\{-5+\sqrt{7}\}$
W. $\{-\sqrt{7}, \sqrt{7}\}$
X. None of these.

(S76) (HW-44, M). What is the solution set for
$(x+\frac{1}{2})^2=-4$?

A. $\{-\frac{1}{2}+2, -\frac{1}{2}-2\}$
B. $\{-2i, +2i\}$
C. $\{-\frac{1}{2}+2i\}$
D. None of these.

(S77) (HW-44, B) $2x^2+11x-6$ factors into

E. $(x-6)(2x+1)$
F. $(x-6)(2x-1)$
G. $(2x+1)(x+6)$
H. $(x+6)(2x-1)$
J. None of these

SM-31

S78 (HW-45 M) In the complete the square process, what is the same number you fill in both blanks below to make a perfect square on the left of the equal sign?

$$x^2 - \frac{1}{2}x + \underline{\quad\quad} = \underline{\quad\quad} - \frac{5}{2}$$

K. $\frac{1}{16}$

L. $-\frac{1}{16}$

M. $\frac{1}{4}$

P. $-\frac{1}{4}$

Q. None of these.

S79 (HW-45,B) The solution set for $2x^2-3x+9=0$ is $\left\{\frac{3-3i\sqrt{7}}{4}, \frac{3+3i\sqrt{7}}{4}\right\}$. What does $2x^2-3x+9$ factor into?

R. $\left(x-\left[\frac{3-3i\sqrt{7}}{4}\right]\right)\left(x-\left[\frac{3+3i\sqrt{7}}{4}\right]\right)$

S. $2\left(x-\left[\frac{3-3i\sqrt{7}}{4}\right]\right)\left(x-\left[\frac{3+3i\sqrt{7}}{4}\right]\right)$

T. $2\left(x+\left[\frac{3-3i\sqrt{7}}{4}\right]\right)\left(x+\left[\frac{3+3i\sqrt{7}}{4}\right]\right)$

W. None of these

S80 (HW-46, T) What is the discriminant for $3x^2+2x+7=0$?

A. 80
B. −80
C. 88
D. −88
E. None of these.

S81 (HW-46, T) When the discriminant for a quadratic equation is negative,

F. there are 2 real solutions
G. there is 1 real solution of multiplicity 2.
H. there are 2 imaginary solutions.
J. None of these.

S82 (HW-46, M) The solution set for $3x^2+2x+7=0$ is

K. $\left\{\frac{-1+2i\sqrt{5}}{3}, \frac{-1-2i\sqrt{5}}{3}\right\}$
L. $\left\{\frac{1+2i\sqrt{5}}{3}, \frac{1-2i\sqrt{5}}{3}\right\}$
M. $\{-80\}$
P. $\left\{\frac{-1+2i\sqrt{5}}{6}, \frac{-1-2i\sqrt{5}}{6}\right\}$
Q. None of these.

SM-33

S83 (HW-47,T) By grouping, then factoring, $2x^3+18x-3x^2-27$ factors into

R. $(x^2-9)(2x+3)$
S. $(x^2-9)(2x-3)$
T. $(2x^2-9)(x+3)$
U. $(x^2+9)(2x-3)$
W. None of these.

S84 (HW-47, m) The solution set for $x^2+9=0$ for all real and complex numbers is:

A. $\{+3i, -3i\}$
B. $\{+3, -3\}$
C. $\{+3, -3, +3i, -3i\}$
D. None of these

S85 (HW-47, B) Fill in the box for the exponent with

$$\frac{1}{5}(3x+2)^{\frac{4}{3}}(x+1)^{-\frac{4}{5}}+4(x+1)^{\frac{1}{5}}(3x+2)^{\frac{1}{3}}=$$

$$(3x+2)^{\frac{1}{3}}(x+1)^{-\frac{4}{5}}\left[\frac{1}{5}(3x+2)^{\frac{4}{3}-\frac{1}{3}}+4(x+1)^{\boxed{}}\right]$$

E. $\frac{1}{5}-\frac{4}{5}$
F. $-\frac{4}{5}$
G. $\frac{1}{5}-\left(-\frac{4}{5}\right)$
H. $\frac{1}{5}$
J. None of these

SM-34

(S86) (HW-48, M, B) the solution set for

$$\frac{(3x+2)^{\frac{1}{3}}}{(x+1)^{\frac{1}{5}}}\left[\frac{23}{5}x+\frac{22}{5}\right]=0$$ is

K. $\left\{-1, -\frac{2}{3}, \frac{-22}{23}\right\}$

L. $\left\{-\frac{2}{3}, -\frac{22}{23}\right\}$

M. $\left\{-\frac{22}{23}\right\}$

P. None of these.

(S87) (HW-49, T, M) when both sides of the equation $2x-11=\sqrt{x-5}$ are squared you get

Q. $4x^2-121=x-5$

R. $4x^2+121=x-5$

S. $4x^2-44x+121=x-5$

T. $4x^2-44x-121=x-5$

U. $4x^2+44x+121=(x-5)^2$

W. $4x^2+44x+121=x-5$

X. None of these

S88 (HW-49). In solving $2x - \sqrt{x-5} = 11$, the radical was isolated, both sides of the equation were squared and it was derived that $(4x-21)(x-6)=0$. The solution set for the original equation is

A. $\{\frac{21}{4}, 6\}$

B. $\{\frac{21}{4}\}$

C. $\{6\}$

D. $\{\ \}$

E. None of these.

S89 (HW-50, T) Squaring both sides of $\sqrt{x+2} + \sqrt{x-6} = \sqrt{x+9}$ gives

F. $x+2 + 2\sqrt{x+2}\sqrt{x-6} + x-6 = x+9$

G. $x+2 + x-6 = x+9$

H. $x+2 + \sqrt{x+2}\sqrt{x-6} + x-6 = x+9$

J. $x+2 + x-6 = (x+9)^2$

K. None of these

S90 (HW-50,51) The original equation is $\sqrt{x+2} - \sqrt{x+9} + \sqrt{x-6} = 0$. Radicals were isolated. Both sides of the equation were squared and eventually it was derived that $(x-7)(3x+31) = 0$. What is the solution set for the original equation?

L. $\{7, \frac{-31}{3}\}$

M. $\{-7, \frac{31}{3}\}$

P. $\{\frac{-31}{3}\}$

Q. $\{7\}$

R. None of these.

S91 (HW52) To find all <u>real</u> solutions for $x-3-\sqrt{x-3}-12=0$, let $w=\sqrt{x-3}$ and get $w^2-w-12=0$, then $(w-4)(w+3)=0$. What is the solution set for $x-3-\sqrt{x-3}-12=0$, the original equation?

S. $\{19, 12\}$

T. $\{19\}$

U. $\{12\}$

X. $\{4, -3\}$

Z. $\{4\}$

A. None of these.

(S92) (HW-53 M) The solution set (all real and complex solutions) for $0 = x^4 - x^2 - 6$ is

B. $\{-\sqrt{3}, \sqrt{3}\}$
C. $\{-\sqrt{2}, \sqrt{2}\}$
D. $\{-\sqrt{3}, \sqrt{3}, -i\sqrt{2}, i\sqrt{2}\}$
E. $\{-\sqrt{3}, \sqrt{3}, -\sqrt{2}, \sqrt{2}\}$
F. None of these.

(S93) (HW-53, B) When $w^2 + w + 6 = 0$, then $w =$

G. 3 or -2
H. 3
J. -2
K. None of these.

(S94) (HW-55) A lot is originally a square. A new lot is formed by expanding each side to where the new lot has each side 2 feet longer than a side of the original lot. The new lot is also a square. The new lot has an area of 50 square feet more than the original lot. Let x be the side length of the original square. What equation describes the area?

L. $(x+2)^2 = x^2 + 50$
M. $x^2 = (x+2)^2 + 50$
P. $(x-2)^2 = x^2 + 50$
Q. $x^2 = (x-2)^2 + 50$
R. None of these.

S95 (HW-56,57) Sue has 50 gallons of liquid E that is a 15% solution of sugar. Sue has a large supply of a 50% solution of sugar. Let x be the number of gallons of the 50% solution to be mixed with liquid E to get a 35% solution. Which equation describes the situation?

S. $(50)(.50) + x(.15) = x(.35)$

T. $(50)(.15) + x(.35) = (50+x)(.50)$

U. $(50)(.35) + x(.50) = (50+x)(.50)$

W. $(50)(.15) + x(.50) = (50+x)(.35)$

X. None of these.

S96 (HW-57, M) Which equation below is equivalent to $7.5 + .5x = 17.5 + .35x$?

A. $75 + 50x = 175 + 35x$

B. $75 + 5x = 175 + 35x$

C. $750 + 50x = 175 + 35x$

D. $750 + 50x = 1750 + 35x$

E. None of these.

(S97) (HW-58) Jane can do a job in 3 hours working alone. Bob can do the job in 4 hours working alone. Bob starts the job at 12 noon and works until 1:30 PM, then Jane and Bob work together until the job is completed. Let x be the time in hours it takes Bob and Jane working together to complete the job. Which equation below describes the situation?

F. $\frac{3}{2}\left(\frac{1}{4}\right) + x \cdot \frac{1}{4} + x \cdot \frac{1}{3} = 1$

G. $\frac{3}{2}\left(\frac{1}{4}\right) + x \cdot \frac{1}{4} + x \cdot \frac{1}{3} = \frac{3}{2}$

H. $\frac{3}{2}\left(\frac{1}{3}\right) + x \cdot \frac{1}{4} + x \cdot \frac{1}{3} = 1$

J. $\frac{3}{2}\left(\frac{1}{3}\right) + x \cdot \frac{1}{4} + x \cdot \frac{1}{3} = 0$

K. None of these.

(S98) (HW-58, T, M) Bob can do a job in 4 hours working alone. Bob and Jane work together on the job for time x. What is the fraction of the job done by Bob working with Jane?

L. $4x$

M. $x \cdot \frac{1}{4}$

P. $x(.4)$

Q. None of these.

SM-40

(S-99) (HW-59,T) $\frac{x}{4} + \frac{x}{3} = \frac{5}{8}$. What is the value of x?

R. $\frac{14}{15}$

S. $\frac{15}{14}$

T. $\frac{12.8}{7.5}$

X. None of these.

(S100) (HW-60) Sam deposits $200 in an account that yields x per cent compounded annually. At the end of 2 years the accumulated principal and interest is $300. Which equation describes the situation?

A. $(200 + 200x(.01)1) + (200 + 200x(.01)1) = 300$

B. $(200 + 200x(.01)1 + (200 + 200x(.01)1) = 200$

C. $(200 + 200x(.01)1) + (200 + 200x(.01)1)x(.01) = 300$

D. None of these.

(S101) (HW-60) Sam deposits $200 in an account that yields x per cent compounded annually. What is the principal after 1 year?

E. $200 + 200x(.01)1$

F. $200 + 200x(1)$

G. $200 + x(.01)1$

H. $200 + x$

J. None of these

S102 (HW-62,T) $\{x \mid x > -10\}$ put in interval notation is

K. $(\infty, -10)$
L. $(-10, \infty)$
M. $(-10, \infty]$
P. $[-10, \infty]$
Q. None of these

S103 (HW-62,T) $\{x \mid 1 < x \leq 5\}$ put in interval notation is

R. $[1,5]$
S. $[1,5)$
T. $(1,5]$
U. $(1,5)$
X. None of these.

S104 (HW-62M) The open interval $(0,5)$ given in set-builder notation is

Y. $\{x \mid x < 5\}$
Z. $\{x \mid x < 0 \text{ OR } x > 5\}$
A. $\{x \mid x > 0 \text{ OR } x < 5\}$
B. $\{x \mid 0 < x < 5\}$
C. None of these.

SM-42

S105 (HW-62 M) The open interval $(-\infty, 5)$ given in set-builder notation is

D. $\{x \mid x < 5\}$
E. $\{x \mid 0 < x < 5\}$
F. $\{x \mid x \leq 5\}$
G. $\{x \mid 0 \leq x \leq 5\}$
H. None of these.

S106 (HW-63, T) A correct first step to solve $5 - \frac{2}{3}(4x-2) \leq -7(4-3x)$ is

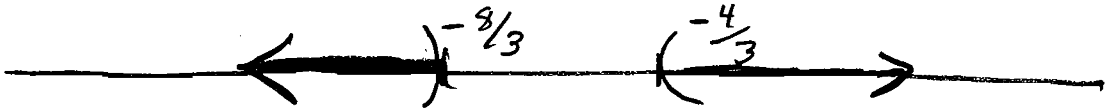
J. $5 - \frac{8}{3}x - \frac{4}{3} \leq -28 - 21x$
K. $5 - \frac{8}{3}x + \frac{4}{3} \geq -28 + 21x$
L. $5 - \frac{8}{3}x + \frac{4}{3} \leq -28 + 21x$
M. None of these

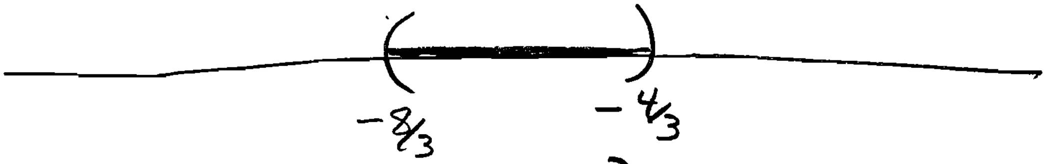
S107 (HW-63, B) Given $\frac{-71}{3}x \leq \frac{-103}{3}$ which of the following is true?

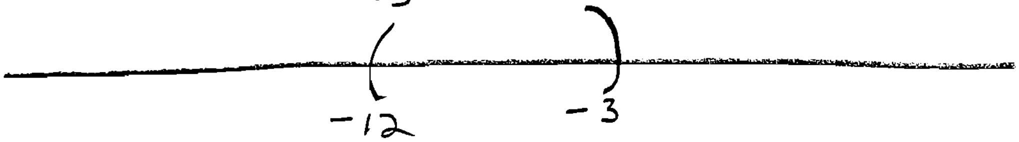
N. $x \leq \frac{103}{71}$
P. $x \geq \frac{(-103)(-71)}{3 \cdot 3}$
Q $x \geq \frac{-103}{71}$
R. None of these.

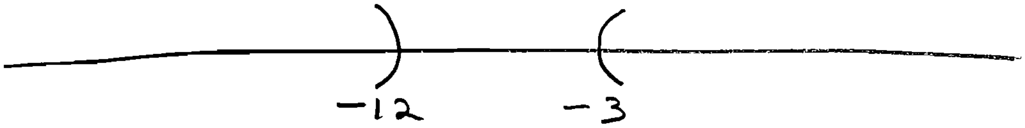
SM-43

(S108) (HW-64, T) The sketch to the solution of
$\frac{2}{3}x+5>3$ OR $\frac{2}{3}x+5<-3$ is

S.


T.


U.


W


X. None of these.

(S109) (HW-64, M) which is a correct next line after
$\frac{-2}{3} \leq \frac{2-3x}{-5} \leq \frac{1}{7}$

A. $(-5)(-\frac{2}{3}) \leq 2-3x \leq -5(\frac{1}{7})$

B. $(-5)(\frac{-2}{3}) \geq 2-3x \geq -5(\frac{1}{7})$

C. $(\frac{-1}{5})(-\frac{2}{3}) \leq 2-3x \leq \frac{-1}{5}(\frac{1}{7})$

D. $(-\frac{1}{5})(\frac{-2}{3}) \geq 2-3x \geq \frac{-1}{5}(\frac{1}{7})$

E. None of these.

SM-44

S110 (HW-64, M) Solve $-\frac{2}{3} \le \frac{2-3x}{-5} \le \frac{1}{7}$

F. $\left(-\frac{4}{9}, \frac{19}{21}\right)$

G. $\left[-\frac{4}{9}, \frac{19}{21}\right]$

H. $\left(-\infty, -\frac{4}{9}\right) \cup \left(\frac{19}{21}, \infty\right)$

J. $\left(-\infty, -\frac{4}{9}\right] \cup \left[\frac{19}{21}, \infty\right)$

K. None of these

S111 (HW-65, T) Interval notation:

$(-2, 5] \cup (3, 6) =$

L. $(-2, 6)$

M. $(-2, 6]$

P. $[3, 5)$

Q $(3, 5]$

R. None of these.

S112 (HW-65, T) which line follows from

$\left|\frac{3}{5} - \frac{2}{3}x\right| \ge \frac{1}{2}$

S. $\frac{3}{5} - \frac{2}{3}x \ge \frac{1}{2}$

T. $\frac{3}{5} - \frac{2}{3}x \ge \frac{1}{2}$ OR $\frac{3}{5} - \frac{2}{3}x \le -\frac{1}{2}$

U. $\frac{3}{5} - \frac{2}{3}x \ge \frac{1}{2}$ AND $\frac{3}{5} - \frac{2}{3}x \le -\frac{1}{2}$

X. None of these.

SM-45

S113 (HW-66, T) Which line follows from $\left|\frac{2}{7} - \frac{3}{4}x\right| \le \frac{1}{3}$

A. $-\frac{1}{3} \le \frac{2}{7} - \frac{3}{4}x \le \frac{1}{3}$

B. $\frac{2}{7} - \frac{3}{4}x \ge \frac{1}{3}$ OR $\frac{2}{7} - \frac{3}{4}x \le -\frac{1}{3}$

C. $\frac{2}{7} - \frac{3}{4}x < \frac{1}{3}$

D. None of these

S114 (HW-66) Solve $\left|\frac{2}{7} - \frac{3}{4}x\right| \le \frac{1}{3}$

E. $(-\infty, -\frac{4}{63}] \cup [\frac{52}{63}, \infty)$

G. $(-\infty, -\frac{4}{63}] \cap [\frac{52}{63}, \infty)$

H. $(-\infty, -\frac{4}{63}]$ OR $[\frac{52}{63}, \infty)$

I. None of these

S115 (HW-66, M) Suppose $\frac{-13}{21} \le -\frac{3}{4}x \le \frac{1}{21}$. Which of the following is true?

K. $\left(-\frac{4}{3}\right)\left(\frac{-13}{21}\right) \ge x \ge \left(-\frac{4}{3}\right)\left(\frac{1}{21}\right)$

L. $\left(-\frac{4}{3}\right)\left(\frac{-13}{21}\right) \le x \le \left(-\frac{4}{3}\right)\left(\frac{1}{21}\right)$

M. $\left(-\frac{4}{3}\right)\left(\frac{-13}{21}\right) \ge x \le \left(-\frac{4}{3}\right)\left(\frac{1}{21}\right)$

P. None of these

S116 (HW-67, T) Suppose $\frac{2}{x+2} - \frac{2}{2x-3} < 0$; which line follows?

Q. $\frac{2 \quad -2}{(x+2)(2x-3)} < 0$

R. $\frac{2 \quad -2}{(x+2) - (2x-3)} < 0$

S. $\frac{2(2x-3) - 2(x+2)}{(x+2) + (2x-3)} < 0$

T. $\frac{2(2x-3) \quad -2(x+2)}{(x+2)(2x-3)} < 0$

U. None of these

S117 (HW-67, B) $(x+2)(2x-3) =$

A. $(x-2)(2)(x-3)$

B. $(x-2)2\left(x-\frac{3}{2}\right)$

C. $(x-[-2])2\left(x-\frac{3}{2}\right)$

D. $(x-[-2])2(x-3)$

E. None of these

SM-47

S118 (HW-67, B) According to the way you were taught, to analyze

$$\frac{-10}{(x-[-2])2(x-\frac{3}{2})} < 0$$

make marks on the number line at

G. $-2, \frac{3}{2}$

H. $2, -\frac{3}{2}$

I. $-10, 2, -2, -\frac{3}{2}$

K. $-10, 2, -\frac{3}{2}$

M. None of these

S119 (HW-68, M) $\frac{x-3}{-2x-8}$ factors into

P. $\frac{x-[-3]}{-2(x-8)}$

Q. $\frac{x-3}{-2(x+8)}$

R. $\frac{x-3}{-2(x-[-4])}$

S. $\frac{x-3}{-2(x-4)}$

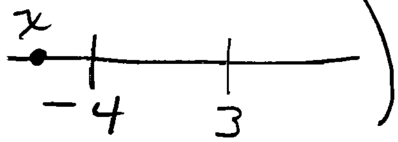
T. None of these.

SM-48

S120 (HW-68, T) For $\sqrt{\frac{x-3}{-2x-8}}$ to be real, $\frac{x-3}{-2x-8}$ must be

A. greater than or equal to zero.
B. less than zero.
C. either positive or negative
D. none of these

S121 (HW-68, B) For $x<-4$ (

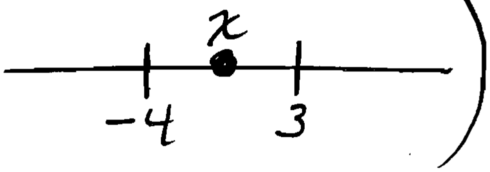


)

$\frac{x-3}{-2(x-[-4])}$ is

F. positive
G. negative
H. zero
J. none of these

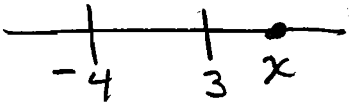
S122 (HW-69, T) For $-4<x<3$, (



)

$\frac{x-3}{-2(x-[-4])}$ is

K. positive
L. negative
M. zero
P. none of these.

S123 (HW-69, M) For $x > 3$, ()

$$\frac{x-3}{-2(x-[-4])}$$ is

R. positive
S. negative
T. zero
U. none of these

S124 (HW-69, B) For $x = -4$,

$$\frac{x-3}{-2(x-[-4])}$$ is

A. positive
B. negative
C. zero
D. none of these.

S125 (HW-70, T) For $x = 3$,

$$\frac{x-3}{-2(x-[-4])}$$ is.

F. Positive
G. Negative
H. Zero
J. None of these

SM-50

S 126 (HW-72, T) The directed distance from 6 to -1 is

F. 5
G. 7
H. $\frac{6-1}{2}$
I. None of these

S 127 (HW-72, M) The midpoint between -10 and $-\frac{3}{2}$ is

K. $\frac{-10+\left(-\frac{3}{2}\right)}{2}$
L. $\frac{-10+\frac{3}{2}}{2}$
M. -6
P. None of these

S 128 (HW-72, B) $\frac{y_1+y_2}{2} - y_1 =$

Q. $\frac{y_1+y_2-y_1}{2}$
R. $\frac{y_1+y_2-2y_1}{2}$
S $\frac{y_2}{2}$
T. None of these

S-129 (HW-73,T) $\sqrt{\left(\frac{x_2-x_1}{2}\right)^2+\left(\frac{y_2-y_1}{2}\right)^2} =$

U. $\frac{\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}}{2}$

W. $\frac{\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}}{4}$

X. $\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$

Z. None of these

S-130 (HW-74,T) The slope of the line between $\left(\frac{-3}{8},2\right)$ and $\left(\frac{1}{4},\frac{-2}{3}\right)$ is

A. $\frac{8}{3}\cdot\frac{20}{32}=\frac{160}{96}$

B. $-\frac{8}{3}\cdot\frac{32}{20}=\frac{-64}{15}$

C. $\frac{8}{3}\cdot\frac{32}{20}=\frac{64}{15}$

D. $-\frac{8}{3}\cdot\frac{20}{32}=-\frac{160}{96}$

E. None of these

SM-52

S-131 (HW-74, T, M) $\frac{1}{4} - (-\frac{3}{8}) =$

G. $\frac{4}{12}$

H. $\frac{3}{32}$

J. $\frac{20}{32}$

K. None of these.

S-132 (HW-74, M) The midpoint between $(3, -6)$ and $(-1, 7)$ is

L. $(1, \frac{1}{2})$

M. $(\frac{-3}{2}, \frac{-8}{2})$

P. $(-3, 6)$

Q. None of these

S 133 (HW 74, B) The slope of the line between $(5, -2)$ and $(1, \frac{1}{2})$ is

R. $\dfrac{\frac{1}{2} - (-2)}{1 - 5}$

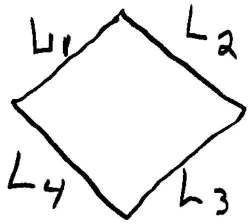
S. $\dfrac{\frac{1}{2} + (-2)}{1 + 5}$

T. $\left(\dfrac{5+1}{2}, \dfrac{-2 + \frac{1}{2}}{2} \right)$

W. None of these.

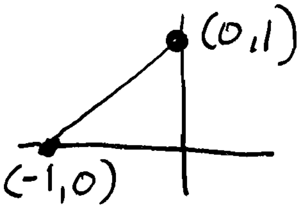
SM-53

S134 (HW-75, T) For the figure at the right to be a square, the slopes of the line segments L_1 and L_2 must be



A. The same
B. reciprocals of each other
C. negative reciprocals of each other
D. None of these.

S135 (HW-75, B). The length of the line segment between (-1,0) and (0,1) is



F. 2
G. $\sqrt{2}$
H. 1
J. None of these

S136 (HW-76, T) $2x+5y=10$ solved for y is

K. $y=\frac{2}{5}x-2$
L. $y=-\frac{2}{5}x+2$
M. $y=-\frac{2}{5}x-2$
P. None of these

SM-54

S137 (HW-76, B) A standard form for $y-3=\frac{5}{2}(x-(-2))$ is

Q. $-5x+2y=16$
R. $5x+2y=16$
S. $-5x-2y=16$
T. None of these

S138 (HW-76, T) what is the slope of the line perpendicular to $2x+5y=10$?

U. $-\frac{2}{5}$
W. $-\frac{5}{2}$
X $\frac{2}{5}$
Z. None of these.

S139 (HW-77, T, M) what is the slope of the line perpendicular to the line through the points $(-2,5)$ and $(3,7)$?

A. $\frac{7-5}{3-(-2)}$
B. $\frac{5}{2}$
C. $-\frac{5}{2}$
D. $\left(\frac{-2+3}{2}, \frac{5+7}{2}\right)$
E. None of these.

SM-55

S140 (HW-77) Which is an equation for the line that is the perpendicular bisector of the line segment between $(-2,5)$ and $(3,7)$?

F. $5x+2y=29$

G. $5x+2y=\frac{29}{2}$

H. $2x+5y=\frac{29}{2}$

J $2x+5y=29$

K. None of these.

S141 (HW-78, T) What is the point $\frac{1}{4}$ of the way from $(2,3)$ to $(4,7)$? It is nearest the point $(2,3)$.

L. $(\frac{5}{2},4)$

M. $(3,5)$

P. $(\frac{3}{2},\frac{5}{2})$

Q. None of these

S142 (HW-78) What is an equation for the line through $(\frac{5}{2},4)$ with slope 5?

R. $y-\frac{5}{2}=5(x-4)$

S. $y-\frac{5}{2}=-\frac{1}{5}(x-4)$

T. $y-4=-\frac{1}{5}(x-\frac{5}{2})$

U $y-4=5(x-\frac{5}{2})$

X. None of these.

S143 (HW-80, T) What is the standard form for a circle with center (-5,6) and radius 4?

A. $(x-5)^2+(y-6)^2=4$

B. $(x-[-5])^2+(y-6)^2=4^2$

C. $(x-[-5])^2+(y-6)^2=4$

D. None of these.

S144 (HW-80, m) A correct next step to get
$15x^2+6x+15y^2-10y=-\frac{3}{5}$
into standard form is

F. $x^2+6x+15y^2-10y=-\frac{3}{5}\cdot 15$

G. $x^2+\frac{6}{15}x+y^2-\frac{10}{15}y=-\frac{3}{5}\cdot 15$

H $x^2+\frac{6}{15}x+y^2-\frac{10}{15}y=-\frac{3}{5}\cdot\frac{1}{15}$

J. None of these.

S145 (HW-80, B) A correct next line that follows from $x^2+\frac{2}{5}x+\frac{1}{25}+y^2-\frac{2}{3}y+\frac{1}{9}=\frac{1}{25}-\frac{1}{25}+\frac{1}{9}$ is

K. $(x+\frac{1}{5})^2+(y-\frac{1}{3})^2=\frac{1}{9}$

L. $(x+\frac{1}{25})^2+(y-\frac{1}{9})^2=1/3$

M. $(x+\frac{2}{5})^2+(y-\frac{2}{3})^2=\frac{1}{9}$

P. None of these

S146 (HW-80, B) The graph of $(x+\frac{1}{5})^2+(y-\frac{1}{3})^2=\frac{1}{9}$ is a circle with

Q. center $(\frac{1}{5},-\frac{1}{3})$ and radius $\frac{1}{9}$

R. center $(\frac{1}{5},-\frac{1}{3})$ and radius $\frac{1}{3}$

S. center $(-\frac{1}{5},\frac{1}{3})$ and radius $\frac{1}{9}$

T. None of these.

S147 (HW-81, T). $12x+3y^2=0$ put into standard form for a parabola is

U. $y^2=-4x$

W. $x=\frac{1}{4}(y-0)^2+0$

X. $x=-\frac{1}{4}(y-0)^2+0$

Z. None of these.

S148 (HW-81, M) Which is a pair of symmetric partners for the parabola $12x+3y^2=0$?

A. $(-1,2)$ and $(1,2)$

B. $(-1,2)$ and $(-1,-2)$

C. $(-1,2)$ and $(1,-2)$

D. None of these.

S149 (HW-81B) $-\frac{1}{5}y^2+2y-6=$

F. $-\frac{1}{5}(y^2-10y \quad)-6$

G. $-\frac{1}{5}(y^2+2y \quad)-6$

H. $-\frac{1}{5}(y^2-2y \quad)-6$

J. None of these

S150 (HW-81B) $-\frac{1}{5}(y^2-10y \quad)-6=$

K. $-\frac{1}{5}(y^2-10y+25)-6-25$

L. $-\frac{1}{5}(y^2-10y+25)-6-5$

M. $-\frac{1}{5}(y^2-10y+25)-6+5$

P. None of these

S151 (HW-82T) The parabola $x=-\frac{1}{5}(y-5)^2-1$ has vertex

Q. $(5,-1)$

R $(-1,-5)$

S. $(1,-5)$

T. $(-1,5)$

W. $(-1,-5)$

X. $(-5,-1)$

Z. None of these

S152 (HW-82T) The axis of symmetry for $x = -\frac{1}{5}(y-5)^2 - 1$ is

A. $y = 5$
B. $y = -5$
C. $x = 1$
D. $x = -1$
E. None of these

S153 (HW-82M) Symmetric partners for $x = -\frac{1}{5}(y-5)^2 - 1$ are

F. $(-6, 0)$ and $(6, 0)$
G. $(-6, -5)$ and $(-6, 5)$
H. $(-6, 0)$ and $(-6, 10)$
J. None of these.

S154 (HW-83T) What is the range of the function $g = \{(3,8), (2,8)\}$?

K. $\{8\}$
L. 8
M. $\{2, 3\}$
P. $2, 3$
Q. $(2, 8)$
R. None of these

SM-60

S155 (HW-83, m) $f(x) = 3x^2 - 2x + 4$

$f(a+b) =$

S. $(3x^2 - 2x + 4)(a+b)$

T. $3a^2 + 3b^2 - 2a + 2b + 4$

U. $3a^2 + 6ab + 3b^2 - 2a + 2b + 4$

W. $3a^2 + 6ab + 3b^2 - 2a - 2b + 4$

X. None of these

S156 (HW-83, B) $f(x) = 3x^2 - 2x + 4$

$$\frac{f(x+h) - f(x)}{h} =$$

A. $\dfrac{(3x^2 - 2x + 4)(x+h) - (3x^2 - 2x + 4)}{h}$

B. $\dfrac{3(x+h)^2 - 2(x+h) + 4 - [3x^2 - 2x + 4]}{h}$

C. $\dfrac{3x^2 + 3h^2 - 2x + h + 4 - [3x^2 - 2x + 4]}{h}$

D. $\dfrac{3(x^2 + h^2) - 2x - 2h + 4 - [3x^2 - 2x + 4]}{h}$

E. None of these.

S157 (HW-83, B) $\frac{3(x+h)^2-2(x+h)+4-[3x^2-2x+4]}{h}=$

F. $\frac{3x^2+3h^2-2x-2h+4-3x^2+2x-4}{h}$

G. $\frac{3x^2+6xh+3h^2-2x-2h+4-3x^2+2x-4}{h}$

H. $\frac{3x^2+6xh+3h^2-2x+2h+4-3x^2-2x+4}{h}$

J. None of these

S158 (HW-83, B) $\frac{6xh+3h^2-2h}{h}=$

K. $\frac{6x+3h^2-2h}{h}$

L. $(-h)(6xh+3h^2-2h)$

M. $6x+3h-2$

P. None of these.

S159 (HW-84, T) $g(x) = \frac{1}{\sqrt{2x+3}}$

$$\frac{g(x+h) - g(x)}{h} =$$

Q. $$\frac{\frac{1}{\sqrt{2x+3}}(x+h) - \frac{1}{\sqrt{2x+3}}}{h}$$

R. $$\frac{\frac{1}{\sqrt{(2x+3)(x+h)}} - \frac{1}{\sqrt{2x+3}}}{h}$$

S. $$\frac{\frac{1}{\sqrt{2(x+h)+3}} - \frac{1}{\sqrt{2x+3}}}{h}$$

T. None of these

S160 (HW-84, M) $\frac{1}{\sqrt{2(x+h)+3}} - \frac{1}{\sqrt{2x+3}} =$

U. $$\frac{\sqrt{2x+3} - \sqrt{2x+2h+3}}{\sqrt{2x+2h+3}\,\sqrt{2x-3}}$$

W. $$\frac{1-1}{\sqrt{2(x+h)+3}\,\sqrt{2x+5}}$$

X. $$\frac{\sqrt{2x+3} - \sqrt{2x+2h+3}}{\sqrt{2x+2h+3} + \sqrt{2x+3}}$$

Z. None of these

SM-63

S161 (HW-84,M) $(\sqrt{2x+3}-\sqrt{2x+2h+3})(\sqrt{2x+3}+\sqrt{2x+2h+3})=$

A. $\sqrt{2x+3}-2\sqrt{2x+3}\sqrt{2x+2h+3}+\sqrt{2x+2h+3}$

B. $(\sqrt{2x+3})^2-2\sqrt{2x+3}\sqrt{2x+2h+3}+(\sqrt{2x+2h+3})^2$

C. $(2x+3)-(2x+2h+3)$

D. None of these

S162 (HW-85,T) Name 2 ordered pairs that satisfy $x=|y|$. x is associated with the 1st terms

F. (2,4) and (2,−4)

G. (2,2) and (2,−2)

H. (−2,2) and (2,2)

J. None of these

S163 (HW-85,T) For the first terms affiliated with x, does $x=|y|$ define a function?

K. Yes

L. No

S164 (HW-85,B) What is a correct next line that follows from $x^2-6x+y^2+12y=-45$?

N. $(x^2-6x+9)+(y^2+12y+36)=-45$

P. $(x^2-6x+9)+(y^2+12y+36)=-9-36-45$

Q. $(x^2-6x+9)+(y^2+12y+36)=9+36-45$

R. None of these.

S165 (HW-85,B) What points satisfy $(x-3)^2+(y+6)^2=0$?

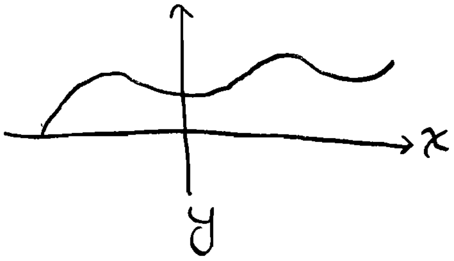
S. Only the point (3,-6).

T. Only the point (-3,+6).

U. No points.

X. None of these.

S166 (HW-86) Is the graph at the right the graph of a function?

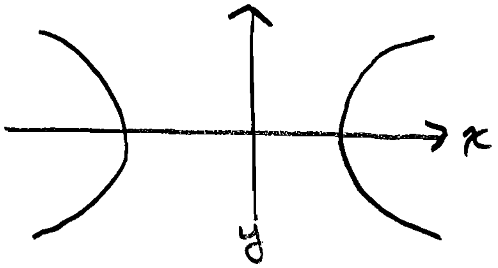


Y. Yes

N. No.

SM-65

S167 (HW-86, B) Is the graph at the right the graph of a function?



Y. Yes

N. No

S168 (HW-87, M) $f(x) = \frac{x}{|x|-2}$

what is the domain of f?

S. $\{x \mid x \neq 2 \text{ and } x \neq -2\}$

T. $\{x \mid x \neq 0\}$

U. $\{x \mid x \neq 2\}$

X. None of these

S169 (HW-87, B) what values make $x^2 + x - 1 = 0$?

A. ± 1

B. $\frac{-1 \pm \sqrt{5}}{2}$

C. $\frac{-1 \pm \sqrt{-3}}{2}$

D. None of these.

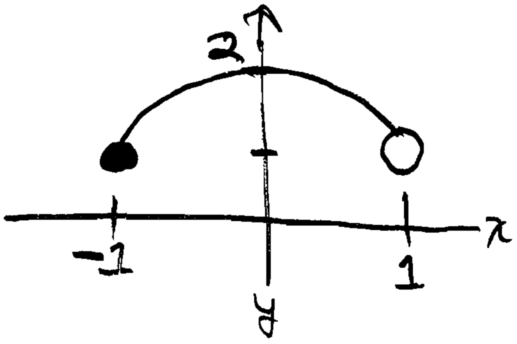
SM-66

S170 (HW-88,T) Find the domain for

$$f(x) = \frac{1}{\sqrt{7-6x}}$$

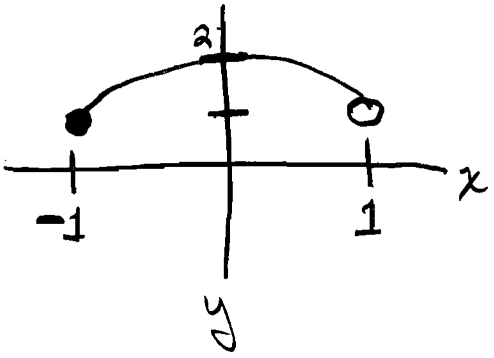
F. $\{x \mid x > 7/6\}$
G. $\{x \mid x < 6/7\}$
H. $\{x \mid x > 6/7\}$
J. None of these.

S171 (HW-88,B) What is the domain for the function at the right?



K. [1,2]
L. [-1,1]
M. [-1,1)
P. [1,2)
Q. None of these.

S172 (HW-88,B) What is the range for the function at the right?



R. [1,2]
S. [-1,1]
T. [-1,1)
U. [1,2)
X. None of these

SM-67

S173 (HW-89) What is the standard form for the parabola $y=-2x^2+3x-7$?

A. $y=-2\left(x+\frac{3}{4}\right)^2-\frac{65}{8}$

B. $y=-2\left(x-\frac{3}{4}\right)^2+\left(\frac{-47}{8}\right)$

C. $y=-2\left(x-\frac{3}{2}\right)+\left(\frac{-47}{8}\right)$

D. None of these

S174 (HW-89) What is the vertex for the parabola $y=-2x^2+3x-7$?

F. $\left(\frac{3}{4}, -\frac{47}{8}\right)$

G. $\left(-\frac{3}{4}, \frac{47}{8}\right)$

H. $\left(\frac{3}{2}, \frac{-47}{8}\right)$

J. None of these

S175 (HW-89) What is the range for $f(x)=-2x^2+3x-7$? Hint, standard form and graph.

K. $(-\infty,\infty)$

L. $\left(-\infty, \frac{47}{8}\right]$

M. $\left(-\infty, -\frac{47}{8}\right]$

P. $\left(-\infty, \frac{65}{8}\right]$

Q. None of these

SM-68

S176 (HW-90, T) What is the range for $f(x) = \frac{1}{x^2+3}$?

R. $(0, \frac{1}{3}]$
S. $(0, 3]$
T. $[0, 1/3]$
U. $[0, \infty)$
X. None of these.

S177 (HW-90, B) Find $f(\frac{5}{2})$ when f is defined by

$$\begin{aligned} f(x) &= 0 \text{ if } 0 \le x < 1 \\ &= 1 \text{ if } 1 \le x < 2 \\ &= 2 \text{ if } 2 \le x < 3 \\ &= 3 \text{ if } 3 \le x < 4 \end{aligned}$$

$f(\frac{5}{2}) =$

A. $\frac{5}{2}$
B. 0
C. 1
D. 2
E. 3
G. None of these

S178 (HW-91, M) The graph of $y=\sqrt{x-2}$ is the graph of $y=\sqrt{x}$ translated

H. right 2
J. left 2
K. up 2
L. down 2
M. None of these.

S179 (HW-91, B). The graph of $y=\frac{1}{3}\sqrt{x-2}-1$ is the graph of $y=\frac{1}{3}\sqrt{x-2}$ translated

P. right 1
Q. left 1
R. up 1
S. down 1
T. None of these

S180 (HW-92, T) what is the remainder for the division $2x-4\overline{)6x-17}$

U. 3
W. -5
X. 29
Z. None of these.

SM-70

S181 (HW-92, M) The graph of $y = \frac{-1}{x}$ is the graph of $y = \frac{1}{x}$ reflected about

A. the x-axis
B. the y-axis
C. the line $y = x$
D. None of these.

S182 (HW-92, B) The graph of $y = \frac{-5}{2}\left(\frac{1}{x-2}\right)$ is the graph of $y = \frac{-5}{2}\left(\frac{1}{x}\right)$ translated

F. right 2
G. left 2
H. up 2
J. down 2
K. None of these

S183 (HW-92, B) The graph of $y = \frac{-5}{2}\left(\frac{1}{x-2}\right) + 3$ is the graph of $y = -\frac{5}{2}\left(\frac{1}{x-2}\right)$ translated

L. right 3
M. left 3
P. up 3
Q. down 3
R. None of these

SM-71

S184 (HW-92, B) Which is the horizontal asymptote for $y = -\frac{5}{2}\left(\frac{1}{x-2}\right) + 3$?

S. $y=2$
T. $y=3$
U. $x=2$
X. $x=3$
Z. None of these.

S185 (HW-93, T) The graph of $f(x)=3x^4-2x^2+7$ is symmetric about

A. the x-axis.
B. the y-axis.
C. the origin
D. None of these

S186 (HW-93, B) The graph of $-y^2=x^4y^6-y$ is symmetric about

F. the x-axis
G. the y-axis
H. the origin
J. None of these.

S187 (HW-94, T) To check for symmetry about the y-axis in $-y^2 = x^4y^6 - y$, you check to see that you get an equivalent equation when you substitute in the original equation

K. $-x$ for x and $-y$ for y

L. $-x$ for x

M. $-y$ for y

P. None of these

S188 (HW-95) The standard form for the ellipse equation $4x^2 + 3y^2 - 8x - 30y + 67 = 0$ is

Q. $\dfrac{(x+1)^2}{(\sqrt{3})^2} - \dfrac{(y+5)^2}{2^2} = 1$

R. $\dfrac{(x+1)^2}{(\sqrt{3})^2} + \dfrac{(y+5)^2}{2^2} = 1$

S. $\dfrac{(x-1)^2}{(\sqrt{3})^2} - \dfrac{(y-5)^2}{2^2} = 1$

T. $\dfrac{(x-1)^2}{(\sqrt{3})^2} + \dfrac{(y-5)^2}{2^2} = 1$

X. None of these.

S189 (HW-95, T) A correct line that follows from $4(x^2-2x \quad)+3(y^2-10y \quad)=-67$ is

A. $4(x^2-2x+1)+3(y^2-10y+25)=-67$
B. $4(x^2-2x+1)+3(y^2-10y+25)=1+25-67$
C. $4(x^2-2x+1)+3(y^2-10y+25)=4+75-67$
D. $4(x^2-2x+1)+3(y^2-10y+25)=-1-25-67$
E. $4(x^2-2x+1)+3(y^2-10y+25)=-4-75-67$
H. None of these

S190 (HW-95,96) Name a vertex for the ellipse $\frac{(x-1)^2}{(\sqrt{3})^2}+\frac{(y-5)^2}{2^2}=1$

J. $(1,5)$
K. $(-1,-5)$
L. $(0,\sqrt{3})$
M. $(0,2)$
P. $(-\sqrt{3},5)$
Q. $(1-\sqrt{3},5)$
R. $(\sqrt{3},2)$
S. $(1+\sqrt{3},0)$
T. None of these.

S191 (HW-96, M) A correct line that follows from $16(x^2+4x\quad)-9(y^2+6y\quad)=161$ is

A. $16(x^2+4x+4)-9(y^2+6y+9)=161$

B. $16(x^2+4x+4)-9(y^2+6y+9)=4-9+161$

C. $16(x^2+4x+4)-9(y^2+6y+9)=64-81+161$

D. $16(x^2+4x+4)-9(y^2+6y+9)=64+81+161$

E. None of these.

S192 (HW-96, B) $16x^2-9y^2+64x-54y-161=0$ put in standard form for a hyperbola is

H. $\dfrac{(x-2)^2}{3^2}-\dfrac{(y-3)^2}{4^2}=1$

J. $\dfrac{(x-[-2])^2}{3^2}-\dfrac{(y-[-3])^2}{4^2}=1$

K. $\dfrac{(y-3)^2}{4^2}-\dfrac{(x-2)^2}{3^2}=1$

L. $\dfrac{(y-[-3])^2}{4^2}-\dfrac{(x-[-2])^2}{3^2}=1$

M $\dfrac{(y-3)^2}{3^2}-\dfrac{(x-2)^2}{4^2}=1$

P. None of these.

SM-75

S193 (HW-97) Name a vertex for the hyperbola $\frac{(x+2)^2}{9} - \frac{(y+3)^2}{16} = 1$

Q. $(-2,-3)$
R. $(3,4)$
S. $(1,-3)$
T. $(-1,-3)$
W. None of these

S194 (HW-99) Let $g(x) = \frac{x}{(4-x)^{\frac{1}{3}}}$ and $h(x) = \frac{1}{2x^3}$. $\operatorname{dom}(gh) =$

A. $\{x \mid x \neq 4 \text{ and } x \neq 0\}$
B. $\{x \mid x \neq 4\}$
C. $\{x \mid x \neq 0\}$
D. None of these.

S195 (HW-99) Let $g(x) = \frac{x}{(4-x)^{\frac{1}{3}}}$ and $h(x) = \frac{1}{2x^3}$. Is $\operatorname{dom}(gh) = \operatorname{dom}\left(\frac{g}{h}\right)$?

Y. Yes

N. No

S196 (HW-100, T) $f(x) = \sqrt{4-3x}$. dom(f) =

F. $[\frac{4}{3}, \infty)$
G. $(-\infty, \frac{4}{3}]$
H. $(-\infty, \frac{3}{4}]$
J. $[\frac{3}{4}, \infty)$
K. None of these.

S197 (HW-100, M) $h(x) = \sqrt{2-x}$. dom(h) =

L. $(-\infty, 2]$
M. $[2, \infty)$
P. $\{2\}$
Q. None of these.

S198 (HW-100) Composition of function f and h.
The domain of f composition h is
R. $\{x \mid x \in \text{dom}(f) \text{ and } x \in \text{dom}(h)\}$
S. $\{x \mid f(x) \in \text{dom}(h) \text{ and } x \in \text{dom}(f)\}$
T. $\{x \mid f(x) \in \text{dom}(h) \text{ and } h(x) \in \text{dom}(f)\}$
W. $\{x \mid x \in \text{dom}(h) \text{ and } h(x) \in \text{dom}(f)\}$
X. None of these.

Sm-77

S199 (HW-100) $f(x) = \sqrt{4-3x}$, $h(x) = \sqrt{2-x}$

dom $(f \circ h) =$

A. $[\frac{2}{9}, 2]$

B. $[\frac{4}{3}, 2]$

C. $(-\infty, 2]$

D. None of these.

S200 (HW-101, M) $4x = b(2+7x) + c$ $b =$

F. $\frac{7}{4}$

H. 2

J. -3

K. None of these

S201 (HW-101.) $H(x) = \sqrt{2+7x} + 5(2+7x)^{\frac{1}{3}} + 4x$

Find f, g such that $H(x) = (f \circ g)(x)$

L. $f(x) = 2+7x$ and $g(x) = \sqrt{x} + 5x^{\frac{1}{3}} + 4x$

M. $f(x) = \sqrt{x} + 5x^{\frac{1}{3}} + \frac{4}{7}x - \frac{8}{7}$ and $g(x) = 2+7x$

P. $f(x) = \sqrt{x} + 5x^{\frac{1}{3}} + \frac{4}{7}x$ and $g(x) = 2+7x$

Q. $f(x) = 2+7x$ and $g(x) = \sqrt{x} + 5x^{\frac{1}{3}} + \frac{4}{7}x - \frac{8}{7}$

R. $f(x) = 2+7x$ and $g(x) = \sqrt{x} + 5x^{\frac{1}{3}} + \frac{4}{7}x$

S. None of these.

SM-78

S202 (HW-102, T) f is a 1 to 1 function.
$f^{-1}(5) = 3$ so $f(3) =$

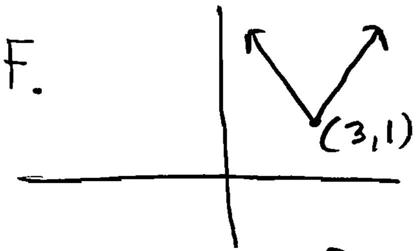
T. 5
U. (5, 3)
X. (3, 5)
Z. None of these.

S203 (HW-102, M) The graph of $f(x) = -2x^2 + 4x + 5$ is a parabola opening down so

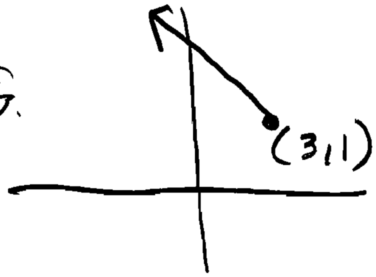
A. f is not 1 to 1 since a horizontal line intersects the graph twice.
B. f is not a function since a horizontal line intersects the graph twice.
C. f is one to one since any vertical line intersects the graph at most once.
D. None of these.

S204 (HW-102, B) Which is the graph of $f(x) = 2|x-3| + 1$, for $x > 3$?

F.



G.



H. None of these

SM-79

S205 (HW-103, m) Which is a correct next line after $y = -2(x^2 - 2x \quad) + 5$?

J. $y = -2(x^2 - 2x + 1) + 5$

K. $y = -2(x^2 - 2x - 1) + 5$

L. $y = -2(x^2 - 2x + 1) + 5 - 1$

M. $y = -2(x^2 - 2x + 1) + 5 + 2$

P. $y = -2(x^2 - 2x + 1) + 5 - 2$

Q. None of these

S206 (HW-103, T) Which is a correct next line after $y = -2x^2 + 4x + 5$?

R. $y = -2(x^2 + 4x \quad) + 5$

S. $y = -2(x^2 - 2x \quad) + 5$

T. $y = -2(x^2 + 2x \quad) + 5$

U. $y = -2(x^2 - 2x \quad) + \frac{5}{2}$

X. $y = -2(x^2 + 2x \quad) + \frac{5}{2}$

Z. None of these

SM-80

(S207) (HW-103) $f(x) = -2x^2 + 4x + 5$ $\underline{\underline{x > 1}}$

Find a formula for $f^{-1}(x)$. ← f <u>inverse</u> of x not $\frac{1}{f(x)}$

A. $f^{-1}(x) = 1 + \sqrt{\frac{x-7}{-2}}$

B. $f^{-1}(x) = 1 + \sqrt{\frac{x-7}{2}}$

C. $\frac{1}{-2x^2 + 4x + 5}$

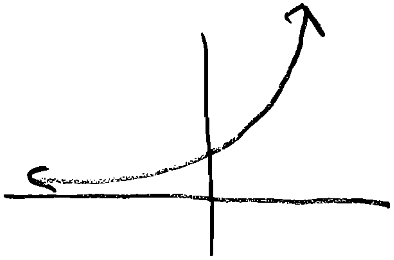
D. $f^{-1}(x) = 1 - \sqrt{\frac{x-7}{-2}}$

E. $f^{-1}(x) = 1 - \sqrt{\frac{x-7}{2}}$

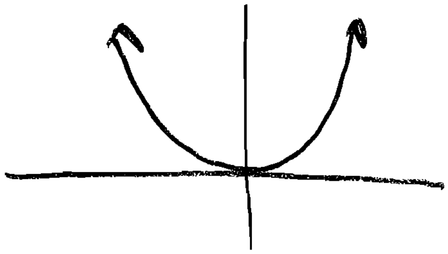
F. None of these

(S208) (HW-105) Which of the following is the graph of $y = \left(\frac{1}{e}\right)^x$?

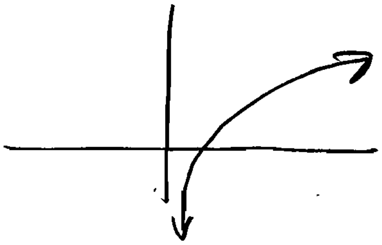
H.



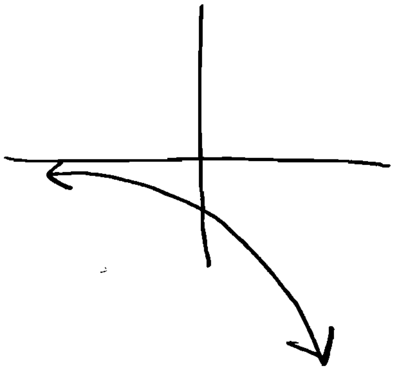
K.



J.



L.



M. None of these

S209 (HW-105, M) Which of the following is the approximate value of $\left(\frac{1}{e}\right)^{-1}$ to the nearest <u>tenth</u>?

P. .37
Q. 2.7
R. 7.3
S. None of these

S210 (HW 105, B) $e^{-2x} =$

T. $\left(\frac{1}{e^2}\right)^x$
U. $(e^{-2})^{-x}$
X. $(e^{\frac{1}{x}})^2$
Z. None of these

S211 (HW 106, T) $3x - 4 =$

A. $3(x-4)$
B. $3(x+\frac{4}{3})$
C. $3(x-\frac{3}{4})$
D. $3(x-\frac{4}{3})$
E. None of these

SM-82

S212 (HW-106, T) $2^{3(x-\frac{4}{3})} =$

H. $\left(2^{\frac{1}{3}}\right)^{x-\frac{4}{3}}$
J. $\left(2^{3}\right)^{x-\frac{4}{3}}$
K. $\left(2x-\frac{4}{3}\right)^{3}$
L. None of these

S213 (HW-106, M) The graph of $y = 8^{x-\frac{4}{3}}$ is the graph of $y = 8^{x}$ translated

M. left $\frac{4}{3}$
P. right $\frac{4}{3}$
Q. up $\frac{4}{3}$
R. down $\frac{4}{3}$
S. None of these

S214 (HW-106, M, B) The graph of $y = 8^{x-\frac{4}{3}} + 1$ is the graph of $y = 8^{x-\frac{4}{3}}$ translated

T. left 1
U. right 1
W. up 1
X. down 1
Z. None of these.

SM-83

S215 (HW-106, B) The horizontal asymptote for $y = 8^{x - 4/3} + 1$ is

A. $y = 1$
B. $y = 4/3$
C. $x = 1$
D. $x = 4/3$
E. None of these

S216 (HW-107, T) $\log_2\left(\frac{1}{8}\right) =$

H. -1
J. 3
K. -3
L. None of these.

S217 (HW-107, T) $\log \frac{1}{1000} =$

M. -1
P. 3
Q. -3
R. None of these

(S218) (HW-107, M) $\log_x e^3 = 3$ $x =$

S. e
T. 3
W. 10
X. 1
Z. None of these

(S219) (HW-107, M) $\log_x \frac{1}{125} = -3$ $x =$

A. 125
B. 10
C 5
D. 3
E. None of these.

(S220) (HW-107, B) Exponential form $2^{-4} = \frac{1}{16}$
The log form is
H. $\log_2 -4 = \frac{1}{16}$
J. $\log_2 \frac{1}{16} = -4$
K. $\log_4 \frac{1}{16} = -2$
L. None of these

S221 (HW-107, B) Eponential form $e^{\frac{1}{2}} = \sqrt{e}$
The log form is

M. $\log_e \frac{1}{2} = \sqrt{e}$

P. $\log_{\frac{1}{2}} e = \sqrt{e}$

Q. $\log_e e^{\frac{1}{2}} = \sqrt{e}$

R. None of these.

S222 (HW-107, B) Log form is $\log \frac{1}{\sqrt{10}} = -\frac{1}{2}$
The exponential form is

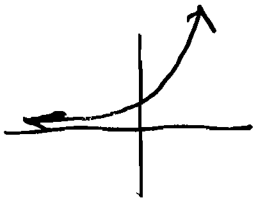
S. $10^{-\frac{1}{2}} = \frac{1}{\sqrt{10}}$

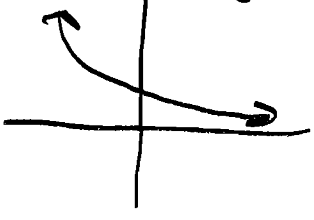
T. $(-\frac{1}{2})^{10} = \frac{1}{\sqrt{10}}$

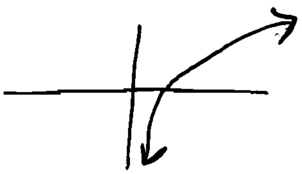
W. $-10^{\frac{1}{2}} = \frac{1}{\sqrt{10}}$

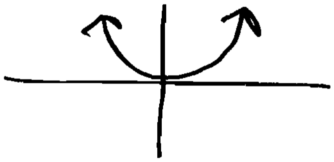
X. None of these

S223 (HW-108, M) The graph of $y = \log x$ is

A.


B.


C.


D.


E. None of these.

S224 (HW-108, M) The graph of $y=-\log x$ is the graph of $y=\log x$ reflected about the

H. x-axis.
J. y-axis.
K. the line $y=x$.
L. None of these.

S225 (HW-108, M) The graph of $y=-3\log(x+2)$ is the graph of $y=-3\log x$ translated

M. right 2
P. left 2
Q. up 2
R. down 2
S. None of these

S226 (HW-108, B) The graph of $y=-3\log(-x+2)-1$ is the graph of $y=-3\log(x+2)-1$ reflected about

T. the x-axis.
U. the y-axis.
W. the line $y=x$.
X. the origin.
Z. None of these.

(S227) (HW-109, T) $x^2 > \frac{5}{2}$ if and only if.

A. $x > \sqrt{5/2}$

B. $x > \sqrt{5/2}$ OR $x < -\sqrt{5/2}$

C. $x > \sqrt{5/2}$ AND $x < -\sqrt{5/2}$

D. None of these.

(S228) (HW-109, T) $f(x) = \ln(2x^2 - 5)$. $\operatorname{dom}(f) =$

F. $(-\infty, -\sqrt{5/2}) \cup (\sqrt{5/2}, \infty)$

G. $(\sqrt{5/2}, \infty)$

H. $(-\infty, -\sqrt{5/2})$

J. $(-\sqrt{5/2}, \sqrt{5/2})$

K. None of these.

(S229) (HW-109, M) $\log_2 3.2 =$

L. $\frac{\ln 3.2}{\ln 2}$

M. $\ln 3.2 - \ln 2$

P. $\frac{\ln 2}{\ln 3.2}$

Q. $\ln 2 - \ln 3.2$

R. None of these.

S230 (HW-109, B) $\ln \frac{\sqrt[3]{xz}}{5y^2} =$

S. $\frac{\ln \sqrt[3]{xz}}{\ln 5y^2}$

T. $\ln \sqrt[3]{xz} - \ln 5y^2$

U. $\frac{\ln \sqrt[3]{xz}}{5y^2}$

X. None of these

S231 (HW-109, B) $\ln (xz)^{1/3} - (\ln 5 + \ln y^2) =$

A. $3 \ln (xz) - 2(\ln 5 + \ln y)$

B. $3 \ln (xz) - \ln 5 + 2 \ln y$

C. $\frac{1}{3} \ln (xz) - (\ln 5 + 2 \ln y)$

D. None of these

S232 (HW-109, B) $\frac{1}{3} \ln xz =$

F. $\frac{1}{3} \ln x + \ln z$

G. $\frac{1}{3} \ln x + z$

H. $\frac{1}{3} x \ln z$

J. $\frac{1}{3} \ln x + \frac{1}{3} \ln z$

K. None of these.

SM-89

S233 (HW-110,T) $5 \ln(x^2+1) =$

L. $\ln(x^2+1)^5$

M. $\ln(x^2+1)^{1/5}$

P. $\ln 5(x^2+1)$

Q. None of these

S234 (HW-110, T) $\ln(x^2+1)^5 - \ln z^{\frac{1}{2}} + \ln x^3 - \ln y^{\frac{1}{4}} =$

R. $\ln\left[(x^2+1)^5 - z^{1/2}\right] + \ln\left[x^3 - y^{\frac{1}{4}}\right]$

S. $\dfrac{\ln(x^2+1)^5}{\ln z^{1/2}} + \dfrac{\ln x^3}{\ln y^{1/4}}$

T. $\ln \dfrac{(x^2+1)^5}{z^{1/2}} + \ln \dfrac{x^3}{y^{1/4}}$

U. None of these

S235 (HW-110, B) Which follows from

$\ln e^{12x-1} = \ln 10^{3x}$?

V. $(12x-1)\ln e = 3x \ln 10$

W. $12x-1 \ln e = 3x \ln 10$

X. $e^{12x-1} \ln = 10^{3x} \ln$

Z. None of these

SM-90

S236 (HW-110, B) Which follows from $x\left(\ln \frac{e^{12}}{10^3}\right) = \ln e$?

A. $x = \dfrac{\ln e}{\ln \dfrac{e^{12}}{10^3}}$

B. $x = \ln\left(\dfrac{e}{\dfrac{e^{12}}{10^3}}\right)$

C. $x = \ln e - \dfrac{e^{12}}{10^3}$

D. None of these

S237 (HW-112) What is the initial setup for synthetic division of $\dfrac{\frac{3}{2}x^3 - \frac{5}{2}x^2 + 0x + 1}{x - [-\frac{1}{2}]}$?

F. $$\begin{array}{r|rrr} \frac{1}{2} & \frac{3}{2} & -\frac{5}{2} & 1 \\ \hline & \frac{3}{2} & & \end{array}$$

H. $$\begin{array}{r|rrrr} -\frac{1}{2} & \frac{3}{2} & -\frac{5}{2} & 0 & 1 \\ \hline & \frac{3}{2} & & & \end{array}$$

J $$\begin{array}{r|rrrr} \frac{1}{2} & \frac{3}{2} & -\frac{5}{2} & 0 & 1 \\ \hline & \frac{3}{2} & & & \end{array}$$

K. None of these

S238 (HW-112, M) For synthetic division, what is the box, $\square$, filled in with in the next step of synthetic division?

$$\begin{array}{r|rrrr} -\frac{1}{2} & \frac{3}{2} & -\frac{5}{2} & 0 & 1 \\ & & & & \\ \hline & \frac{3}{2} & \boxed{} & & \end{array}$$

L. $-8/6$

M. $\frac{15}{8}$

P. $\frac{13}{4}$

Q. $-\frac{13}{4}$

R. $-3/4$

S. $3/4$

T. None of these

S239 (HW-112, T) $2x+1 =$

A. $2(x+1)$

B. $2(x+\frac{1}{2})$

C. $2(x+2)$

D. None of these

(S240) (HW-112) For the synthetic division below, what is the quotient, Q, without the remainder?

$$\begin{array}{r|rrrr} -\frac{1}{2} & \frac{3}{2} & -\frac{5}{2} & 0 & 1 \\ & & -\frac{3}{4} & \frac{13}{8} & -\frac{13}{16} \\ \hline & \frac{3}{2} & -\frac{13}{4} & \frac{13}{8} & \boxed{\frac{3}{16}} \end{array}$$

F. $\frac{3}{2}x^3 - \frac{13}{4}x^2 + \frac{13}{8}x + \frac{3}{16}$

G. $\frac{3}{2}x^2 - \frac{13}{4}x + \frac{13}{8}$

H. $\frac{3}{2}x^3 - \frac{5}{2}x^2 + 0x + 1$

J. $\frac{3}{16}$

K. None of these.

(S241) (HW-113) Perform the synthetic division that is set up below. What goes in the place indicated by the arrow?

$$\begin{array}{r|rrrrr} 144 & 1 & -145 & 143 & 145 & -146 \\ & & & & & \\ \hline & 1 & & & & \boxed{} \longleftarrow \end{array}$$

L. 1
M. −1
P. 2
Q. −2
R. None of these.

SM-93

S242 (HW-114 T) $x^4(x^3-8)-(x^3-8) =$

S. $(x^3-8)(x^4-1)$
T. $(x^3-8)x^4$
U. $(x^4-1)(x^3-8)$
X. None of these

S243 (HW-114,M) $x^2+1 =$

A. $(x-1)(x+1)$
B. $(x+1)(x+1)$
C. $(x-i)(x+i)$
D. $(x+i)(x+i)$
E. None of these.

S244 (HW-115,T) Consider equations a. and b. below:

a. $12x+4y=11$
b. $3x-8y=-4$

When equation b. is multiplied by -4 and added to equation a. the result is:

H. $-4y=7$
J. $36y=7$
K. $36y=27$
L. None of these

S245 (HW-115, M) Solving $36y = 27$ for y and substituting that value for y into $3x - 8y = -4$ gives the equation

M. $3x - 6 = -4$

P. $3x + 6 = -4$

Q. $3x - \frac{32}{3} = -4$

R. None of these.

S246 (HW-115, B) Solving $3x - 8y = -4$ for x gives

S. $x = \frac{3}{8}y - \frac{3}{4}$

T. $x = \frac{8}{3}y - \frac{4}{3}$

U. $x = \frac{8}{3}y - \frac{3}{4}$

X. None of these.

S247 (HW-115, M) What is the x value of the solution to:

$$\begin{aligned} 12x + 4y &= 11 \\ 3x - 8y &= -4 \end{aligned}$$

?

A. $\frac{3}{4}$

B. $\frac{3}{2}$

C. $\frac{2}{3}$

D. $\frac{4}{3}$

E. None of these.

SM-95

S248 (HW-115,116) Substituting $\frac{8}{3}y - \frac{4}{3}$ for x in the equation $12x + 4y = 11$ gives

H. $96y - 48 + 4y = 11$

J. $\frac{96}{3}y + \frac{48}{3} + 4y = 11$

K. $\frac{96}{3}y - \frac{48}{3} + 4y = 11$

L. None of these.

S249 (HW-117,T) What is the solution set for

$$\begin{aligned} y &= \tfrac{1}{7} + \tfrac{2}{7}x \\ 4x - 14y &= 6 \end{aligned}$$?

M. $\{(\frac{6}{7}, \frac{-3}{7})\}$

P. $\{(\frac{7}{6}, \frac{-5}{7})\}$

Q. $\{(\frac{5}{7}, \frac{-14}{3})\}$

R. None of these

S250 (HW-118,T) Adding the 2 equations below gives

$$\begin{aligned} 4x - 10y + 6z &= -44 \\ 21x + 3y - 6z &= -27 \end{aligned}$$

S. $25x - 7y = -71$

T. $17x + 13y = 17$

U. $17x - 7y = -71$

X. None of these

S251 (HW-118) The x-value of the only solution to the system of equations below is:

$$\begin{aligned} 2x - 5y + 3z &= -22 \\ 7x + y - 2z &= -9 \\ 5x + 3y + 4z &= -5 \end{aligned}$$

A. 2
B. 3
C. −2
D −3
E. None of these

S252 (HW-118, T) For the 2 equations

$$\begin{aligned} 2x - 5y + 3z &= -22 \\ 7x + y - 2z &= -9 \end{aligned}$$

,

z can be elimated by multiplying the 1st equation by 2 and the second equation by ____ and then adding those equations together. The blank is filled in with

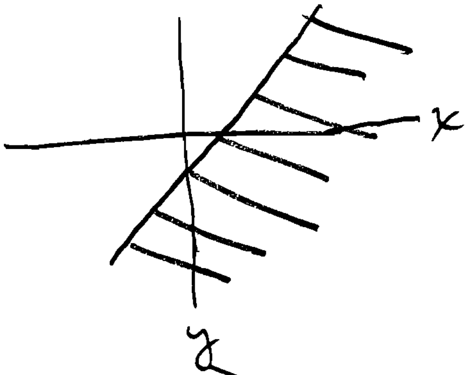
H. −2
J. −3
K. 3
L. 2
M. None of these

S253 (HW - 118, T) When $2x-5y+3z=-22$ is multiplied by 2 and $7x+y-2z=-9$ is multiplied by 3 and the new equations are <u>added</u> together, what variable is eliminated?

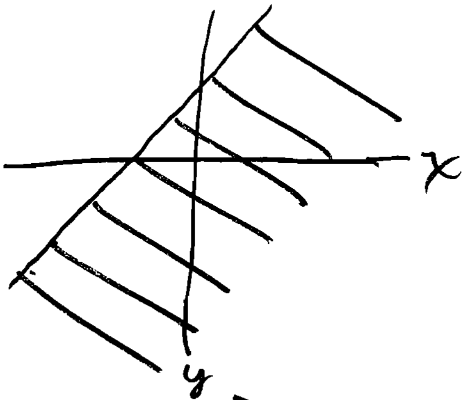
P. x
Q. y
R. z
S. None of these

S254 (HW-120, M) The graph of $2x-y\le 2$ is

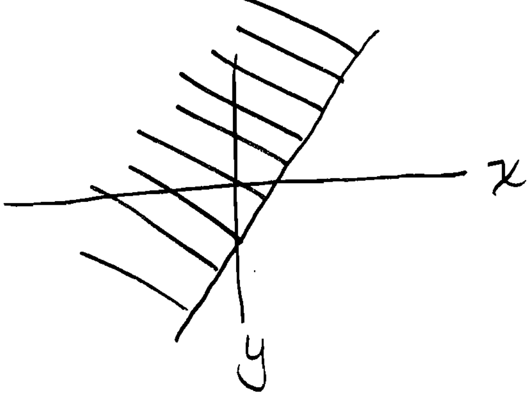
T.



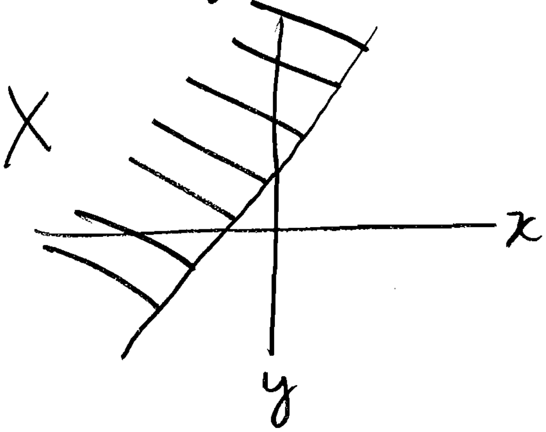
U.



W.



X

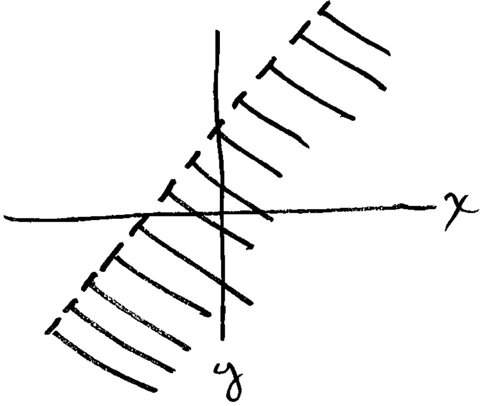


Z. None of these

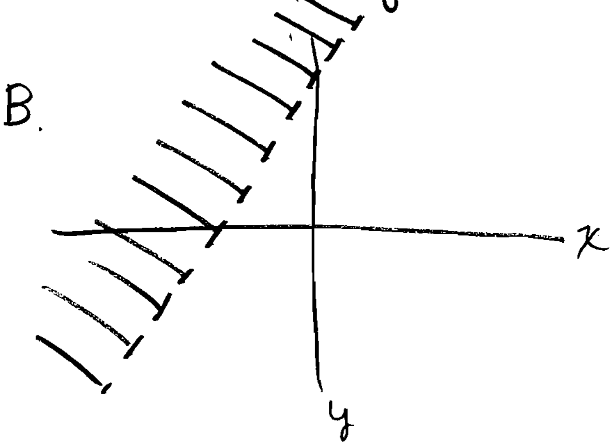
SM-98

S255 (HW-120, B) The graph of $-3x+2y<12$ is

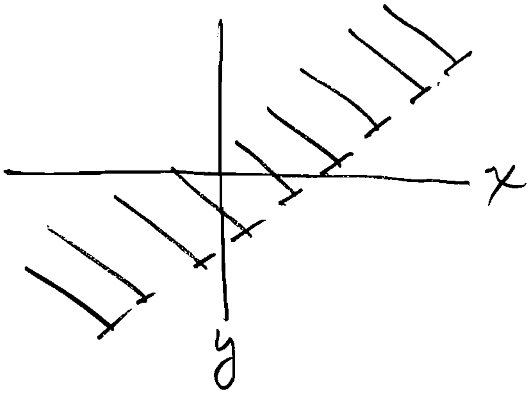
A.



B.



C.



D. None of these

S256 (HW-121,122) Which is a vertex for the system

$$\left\{\begin{array}{c} 2x-y\le 2 \\ -3x+2y<12 \\ 2x+y\ge 0 \end{array}\right\} ?$$

F. $\left(\frac{1}{2},\frac{3}{2}\right)$

G. $\left(-\frac{1}{2},-1\right)$

H. $\left(\frac{1}{2},1\right)$

J. $\left(\frac{1}{2},-1\right)$

K. None of these

SM-99

S257 (HW-122) Which is a vertex for the system $\left\{ \begin{array}{c} 2x-y\leq 2 \\ -3x+2y<12 \\ 2x+y\geq 0 \end{array} \right\}$?

L. (16, 20)
M. (16, 30)
P. (20, 16)
Q (30, 16)
R. None of these ?

ASM-1

ANSWER SHEET - SUPPLEMENTARY MATERIALS

S1 d
S2 g
S3 k
S4 t
S5 t
S6 g
S7 t
S8 c
S9 g
S10 l
S11 r
S12 N
S13 b
S14 f
S15 p
S16 W
S17 N
S18 W
S19 θ
S20 T

S21 w
S22 B
S23 E
S24 P
S25 T
S26 Z
S27 C
S28 F
S29 K
S30 R
S31 N
S32 I
S33 L
S34 R
S35 S
S36 D
S37 N
S38 P
S39 T
S40 B

S41 E
S42 H
S43 S
S44 X
S45 C
S46 F
S47 N
S48 X
S49 C
S50 H
S51 N
S52 S
S53 W
S54 A
S55 H
S56 K
S57 M
S58 T
S59 B
S60 J

S61 K
S62 S
S63 A
S64 H
S65 L
S66 S
S67 C
S68 E
S69 L
S70 Q
S71 T
S72 B
S73 H
S74 P
S75 T
S76 D
S77 H
S78 K
S79 S
S80 B

S81 H
S82 K
S83 U
S84 A
S85 G
S86 L
S87 S
S88 C
S89 F
S90 Q
S91 T
S92 D
S93 K
S94 L
S95 W
S96 D
S97 F
S98 M
S99 S
S100 C

ASM-2

ANSWER SHEET - SUPPLEMENTARY MATERIALS (CONT.)

S101	E	S121	G	S141	L	S161	C	S181	A
S102	L	S122	K	S142	U	S162	G	S182	F
S103	T	S123	S	S143	B	S163	L	S183	P
S104	B	S124	D	S144	H	S164	Q	S184	T
S105	D	S125	H	S145	K	S165	S	S185	B
S106	L	S126	I	S146	T	S166	Y	S186	G
S107	R	S127	K	S147	X	S167	N	S187	L
S108	W	S128	R	S148	B	S168	S	S188	T
S109	B	S129	U	S149	F	S169	B	S189	C
S110	G	S130	B	S150	M	S170	J	S190	Q
S111	L	S131	J	S151	T	S171	M	S191	C
S112	T	S132	L	S152	A	S172	R	S192	J
S113	A	S133	R	S153	H	S173	B	S193	S
S114	I	S134	C	S154	K	S174	F	S194	A
S115	K	S135	G	S155	W	S175	M	S195	Y
S116	T	S136	L	S156	B	S176	R	S196	G
S117	C	S137	Q	S157	G	S177	D	S197	L
S118	G	S138	Z	S158	M	S178	H	S198	W
S119	R	S139	C	S159	S	S179	S	S199	A
S120	A	S140	G	S160	U	S180	W	S200	K

Asm-3

ANSWER SHEET-SUPPLEMENTARY MATERIALS (CONT.)

S201	M
S202	T
S203	A
S204	H
S205	M
S206	S
S207	A
S208	M
S209	Q
S210	T
S211	D
S212	J
S213	P
S214	W
S215	A
S216	K
S217	Q
S218	S
S219	C
S220	J
S221	R
S222	S
S223	C
S224	H
S225	P
S226	U
S227	B
S228	F
S229	L
S230	T
S231	C
S232	J
S233	L
S234	T
S235	V
S236	A
S237	H
S238	Q
S239	B
S240	G
S241	Q
S242	S
S243	C
S244	K
S245	M
S246	T
S247	C
S248	K
S249	R
S250	S
S251	C
S252	K
S253	R
S254	W
S255	A
S256	J
S257	M