

MAT 1033 Final Exam Review

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

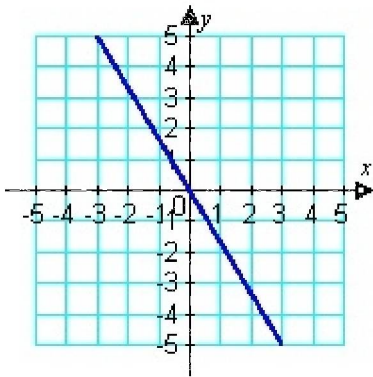
1) Determine the slope of the line containing the two points (5, -2) and (1, -5).

- A) $\frac{3}{4}$ B) $\frac{4}{3}$ C) $\frac{6}{7}$ D) $-\frac{7}{6}$

2) Use the slope formula to determine the slope of the line containing the two points (5, -5) and (5, -1)

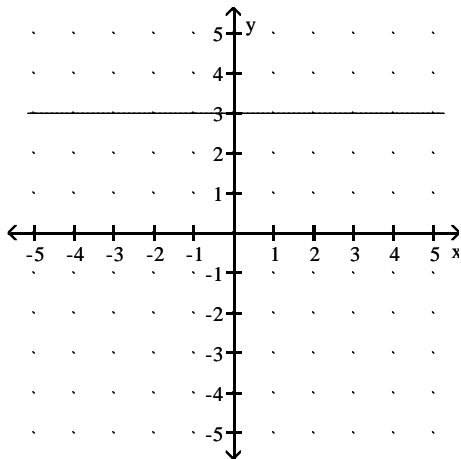
- A) $\frac{2}{5}$ B) 0 C) $-\frac{3}{5}$ D) undefined

3) Estimate the slope of the line from its graph.



- A) $\frac{5}{3}$ B) $-\frac{5}{3}$ C) $-\frac{3}{5}$ D) $\frac{3}{5}$

4) Estimate the slope of the line from its graph.

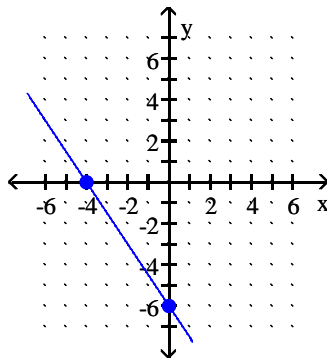


- A) 3 B) 1 C) 0 D) undefined

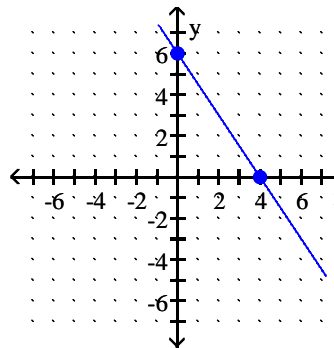
5) Find the x -intercept and the y -intercept and graph both. Then graph the line.

$$3x + 2y = 12$$

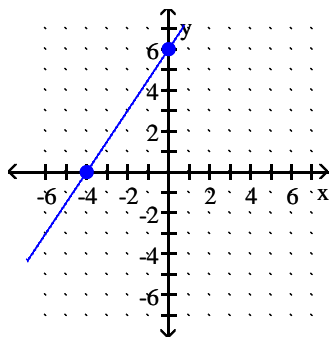
A)



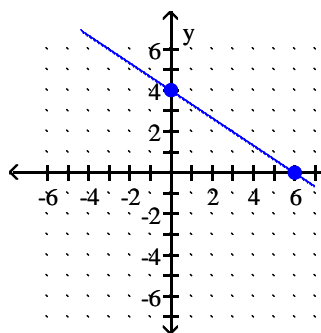
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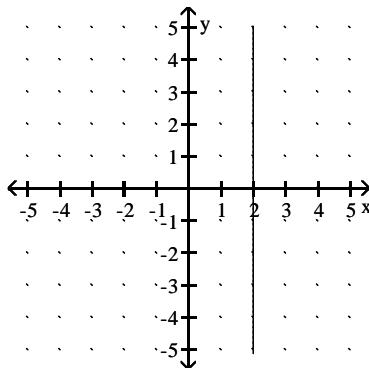
C)



D)



6) Determine the equation of the line graphed below.



A) $y = 2$

B) $x = 2$

C) $x + y = 2$

D) $y = 2x$

7) Write an equation of the line satisfying the given conditions. Write the answer using function notation.

The line passes through the point $(12, 9)$ and has a slope of $\frac{5}{4}$.

A) $f(x) = \frac{5}{4}x - 6$

B) $y = -\frac{5}{4}x - 6$

C) $f(x) = \frac{5}{4}x - 24$

D) $y = \frac{5}{4}x - 6$

8) Write an equation of the line satisfying the given conditions. Write the answer in slope-intercept form.

The line passes through (8, -3) and (6, 5).

- A) $y = 4x + 35$ B) $y = -4x + 29$ C) $y = -4x - 29$ D) $y = -4x + 35$

9) Write an equation of the line satisfying the given conditions.

The line passes through (8, -1) and (8, -5).

- A) $y = -8$ B) $y = 8x$ C) $y = 8$ D) $x = 8$

10) The slope of a line is given. Find the slope of a line perpendicular to the given line.

$$m = \frac{19}{23}$$

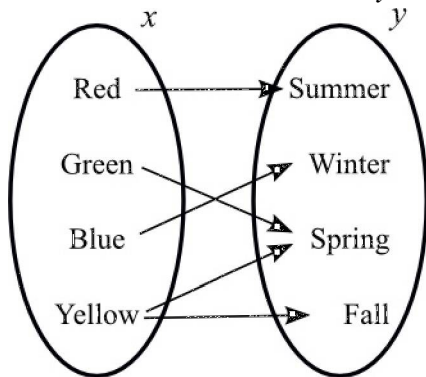
- A) $\frac{23}{19}$ B) $-\frac{19}{23}$ C) $-\frac{23}{19}$ D) $\frac{19}{23}$

11) Use the given conditions to write an equation for the line in slope-intercept form:

Passing through (5, -5) and parallel to the line whose equation is $y = -5x + 6$.

- A) $y = -5x - 20$ B) $y = 5x - 20$ C) $y = -5x + 20$ D) $y = -\frac{1}{5}x - 4$

12) Determine if the relation defines y as a function of x .



- A) Function B) Not a function

13) Which relation is NOT a function?

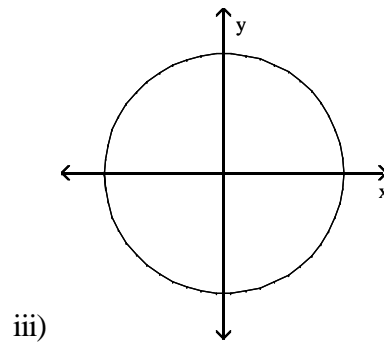
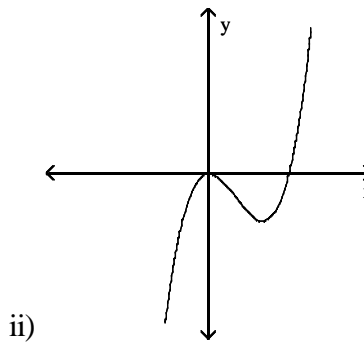
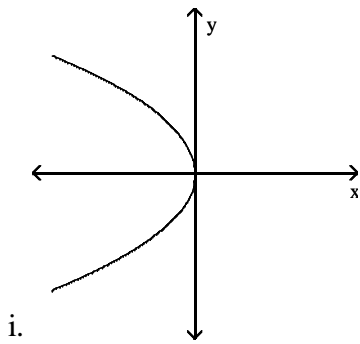
- A) $\{(9, 11), (11, 5), (-9, 5), (5, 11)\}$ B) $\{(-9, 2), (3, 11), (0, 11), (5, 11)\}$
C) $\{(9, 9), (11, 11), (5, 5), (0, 0)\}$ D) $\{(9, 11), (0, 5), (11, 9), (9, 5)\}$

14) List the domain and range.

x	y
-4	8
-8	10
2	2
-6	1
-8	7
2	1

- A) Domain $\{-4, -8, 2, -6, -8, 2\}$; range $\{8, 10, 2, 1, 7, 1\}$
 B) Domain $\{-4, -8, 2, -6\}$; range $\{8, 10, 2, 1, 7, 1\}$
 C) Domain $\{-4, -8, 2, -6\}$; range $\{8, 10, 2, 1, 7\}$
 D) None of the above

15) Decide which, if any, of the following graphs are functions.



- A) ii
 B) i, iii
 C) i, ii
 D) none are functions

16) If $f(x) = 2x^2 + 7x - 4$, find $f(-5)$

- A) $f(-5) = 53$ B) $f(-5) = 11$ C) $f(-5) = 61$ D) $f(-5) = -89$

17) Solve by using the substitution method.

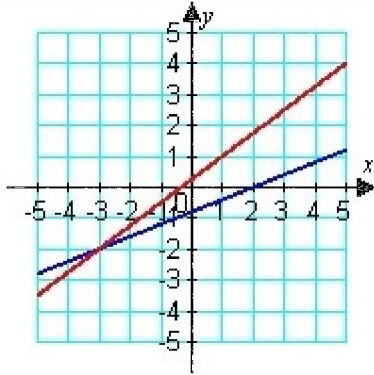
$$\begin{aligned} x - 3y &= 6 \\ 4x - 1y &= -20 \end{aligned}$$

- A) $(-6, -4)$
 B) $(-9, -5)$
 C) $(-5, 0)$
 D) Infinitely many solutions; $\left\{ (x, y) \mid y = \frac{1}{3}x - 2 \right\}$; dependent system

18) Determine the solution to the system which is graphed below.

$$2x - 5y = 4$$

$$4y = 3x + 1$$



A) (2, 0)

C) (-3, -2)

B) $\{(x, y) \mid 2x - 5y = 4\}$

D) \emptyset

19) Solve the system by the addition method.

$$4x + 3y = -11$$

$$-3x - 8y = -9$$

A) (-8, 7)

B) (3, 0)

C) (-2, -1)

D) (-5, 3)

20) Solve the system.

$$-4x + 8y = 4$$

$$x = 2y - 1$$

A) (9, 5)

B) $\left(0, \frac{1}{2}\right)$

C) Infinitely many solutions; $\left\{(x, y) \mid y = \frac{1}{2}x + \frac{1}{2}\right\}$; dependent system

D) No solution; $\{ \}$; inconsistent system

21) Solve the system.

$$y = -\frac{1}{5}x + 8$$

$$x + 5y = 1$$

A) (1, 0)

B) (-4, 1)

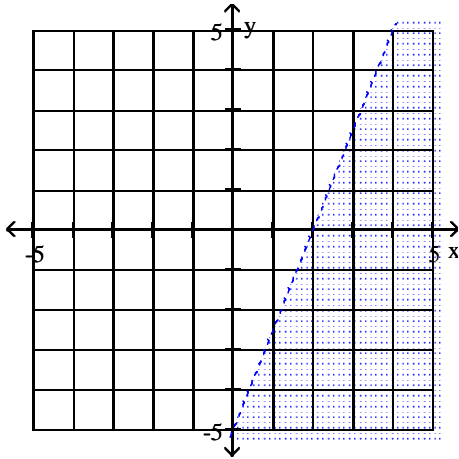
C) Infinitely many solutions; $\left\{(x, y) \mid y = -\frac{1}{5}x + 8\right\}$; dependent system

D) No solution; $\{ \}$; inconsistent system

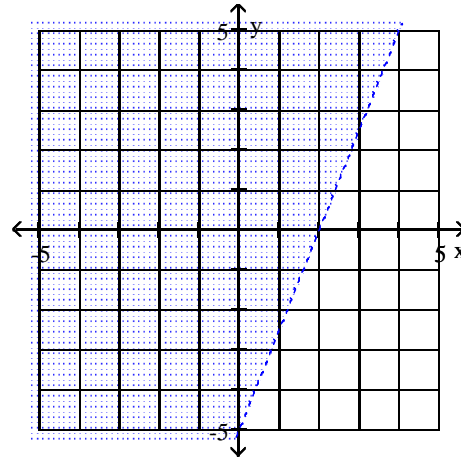
22) Graph the solution set of the inequality.

$$10x - 4y < 20$$

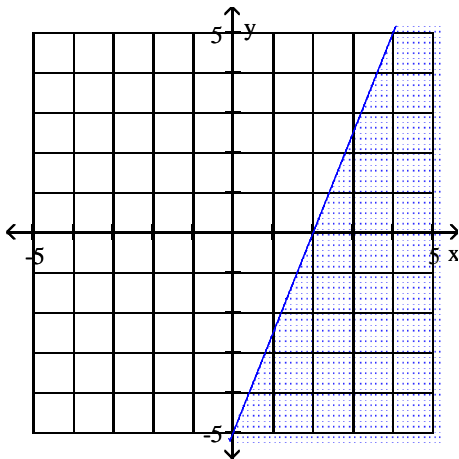
A)



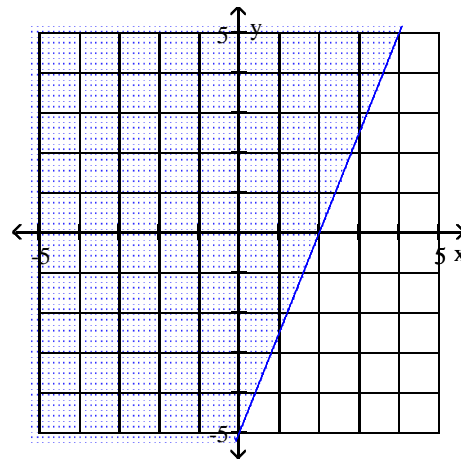
B)



C)



D)



23) Write the number in scientific notation.

The estimated force of sunlight shining on the earth is 540,000,000 newtons.

A) 5.4×10^{-8} meters per second

B) 5.4×10^8 meters per second

C) 5.4×10^7 meters per second

D) 0.54×10^9 meters per second

24) Write the polynomial in descending order. Then identify the leading coefficient and the degree.

$$-9x + 9 + 2x^6$$

A) $2x^6 - 9x + 9$; leading coefficient: 2; degree: 3

B) $9 + 2x^6 - 9x$; leading coefficient: 9; degree: 6

C) $9 + 2x^6 - 9x$; leading coefficient: 9; degree: 3

D) $2x^6 - 9x + 9$; leading coefficient: 2; degree: 6

25) Subtract the polynomials and simplify.

$$(-7r^3 + 6r + 1) - (-3r^3 - 8r - 8)$$

A) $-4r^3 + 14r + 9$

B) $-10r^3 - 2r - 7$

C) $-4r^3 - 2r - 7$

D) $-4r^3 + 6r^2 + 8r + 9$

26) Multiply the polynomials by using the distributive property.

$$7s^3t^2(s^4t^3 - 4st^2 - 7s^4)$$

A) $7s^7t^5 - 4st^2 - 7s^4$

B) $7s^7t^5 - 4s^4t^4 - 7s^4$

C) $7s^7t^5 - 28s^4t^4 - 49s^7t^2$

D) $7s^7t^5 - 28s^4t^4 - 49s^7$

27) Multiply the polynomials by using the distributive property.

$$(x^2 - 9)(-5x + 4)$$

A) $-5x^3 + 4x^2 - 36x - 5$

B) $-5x^3 + 4x^2 + 45x - 36$

C) $-5x^3 - 5$

D) $-5x^3 + 49x - 36$

28) Divide the polynomials.

$$\frac{-30x^6y^5 + 18x^5y^5 + 3x^2y^8}{-6x^5y^5}$$

A) $5x - 3y - \frac{y^3}{2x^3}$

B) $5x - 3 - \frac{y^3}{2}$

C) $5x - 3 - \frac{3y^4}{2x^3}$

D) $5x - 3 - \frac{y^3}{2x^3}$

29) Solve the equation.

$$7x^2 + 41x = -30$$

A) $\left\{-\frac{6}{7}, 5\right\}$

B) $\left\{\frac{6}{7}, -5\right\}$

C) $\left\{-\frac{6}{7}, -5\right\}$

D) $\left\{\frac{6}{7}, 5\right\}$

30) Solve the equation.

$$t(15t - 8) = -1$$

A) $\left\{-\frac{1}{5}, -\frac{1}{3}\right\}$

B) $\left\{\frac{1}{5}, \frac{1}{3}\right\}$

C) $\left\{0, \frac{8}{15}\right\}$

D) $\left\{\frac{1}{5}, -\frac{1}{3}\right\}$

31) Identify the restricted values of the rational expression.

$$\frac{y - 15}{y^2 - 8y - 20}$$

A) $y = 10, y = -2$

B) $y = 15$

C) There are no restricted values.

D) $y = 15, y = 10, y = -2$

32) Simplify the rational expression.

$$\frac{9x^2 - 4}{4 - 6x}$$

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

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

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

D) $\frac{3x}{2}$

33) Simplify the rational expression.

$$\frac{2x^4 + 12x^3 + 10x^2}{x^3 + 1}$$

A) $2x^4 + 12 + 10x^2$

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

C) $\frac{2x^4 + 12x^3 + 10}{x + 1}$

D) $\frac{2x^4 + 12x^3 + 10x^2}{x^3 + 1}$; cannot be simplified

34) Multiply the rational expressions.

$$\frac{2x^2 - 2x - 12}{x + 7} \cdot \frac{x^2 - 49}{2x^2 + 4x}$$

A) $\frac{(x - 3)(x - 7)}{x}$

B) $\frac{(2x + 4)(x - 3)}{x + 4}$

C) $\frac{(x - 3)(x + 7)}{2x^2 + 7x}$

D) $\frac{(x - 3)(x - 7)^2}{x(x + 7)}$

35) Divide the rational expressions.

$$\frac{7y^4}{x^6} \div \frac{28y^2}{3x}$$

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

B) $\frac{196y^6}{3x^7}$

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

D) $\frac{3x^7}{196y^6}$

36) Find the least common denominator (LCD).

$$\frac{9x}{x + 9}, \frac{-4}{x^2 - 81}$$

A) $x - 9$

B) $(x + 9)(x^2 - 81)$

C) $x + 9$

D) $(x + 9)(x - 9)$

37) Add or subtract as indicated and simplify if possible.

$$\frac{t^2 - 8}{t - 3} - \frac{-4t + 13}{t - 3}$$

A) $\frac{t^2 - 4t + 5}{t - 3}$

B) $\frac{t + 7}{2}$

C) $\frac{t^2 + 4t + 5}{t - 3}$

D) $t + 7$

38) Add.

$$\frac{-2y}{2y^2 + 5y} + \frac{y - 3}{2y^2 + y - 10}$$

A) $\frac{1 - y}{(2y + 5)(y - 2)}$

B) $\frac{-3y^2 + y + 1}{y(2y + 5)(y - 2)}$

C) $\frac{-y - 3}{4y^2 + 6y - 10}$

D) $\frac{-2y^2 + y - 3}{2y^3 + 5y^2 - 10}$

39) Solve the rational equation.

$$\frac{3}{x} + \frac{3}{x - 5} = \frac{3x - 12}{x - 5}$$

A) $\left\{-\frac{5}{2}, \frac{1}{3}\right\}$

B) $\{1\}$

C) $\{5, 1\}$

D) $\{\}$

40) Solve the rational equation.

$$\frac{t - 2}{t - 1} = \frac{t + 17}{t^2 - 1} - \frac{1}{t + 1}$$

A) $\left\{7, \frac{1}{2}\right\}$

B) $\left\{-3, -\frac{5}{2}\right\}$

C) $\{-4, 5\}$

D) $\{5\}$

41) Find all real square roots of 100.

A) 10

B) -10

C) 10, -10

D) Not a real number

42) Evaluate the root without using a calculator or note that root is not a real number.

$$\sqrt{\frac{144}{121}}$$

A) $\frac{12}{121}$

B) $\frac{12}{11}$

C) $-\frac{12}{11}$

D) Not a real number

43) Evaluate the root without using a calculator or note that root is not a real number.

$$\sqrt[3]{-125}$$

A) 5

B) -5

C) 6

D) Not a real number

44) Evaluate the root without using a calculator or note that root is not a real number.

$$\sqrt[4]{-1296}$$

A) -6

B) 7

C) 6

D) Not a real number

45) Write in radical notation then simplify the expression, if possible.

$$64^{2/3}$$

A) $(\sqrt{64})^3 = 512$

B) $(\sqrt[3]{64})^2 = 44\frac{2}{3}$

C) $(\sqrt[3]{64})^2 = 16$

D) Not a real number

46) Simplify the expression by using the properties of rational exponents. Write the final answer using positive exponents only. Assume all variables represent positive real numbers.

$$h^{-4/3} \cdot h^{16/3}$$

A) h^2

B) $h^{64/9}$

C) $h^{64/3}$

D) h^4

47) Simplify the expression by using the properties of rational exponents. Write the final answer using positive exponents only. Assume all variables represent positive real numbers.

$$\left(\frac{81s^{12}r^{-4}}{16s^{-4}r^4}\right)^{3/4}$$

A) $\frac{3s^{16}r^8}{2}$

B) $\frac{27s^{12}}{8r^6}$

C) $\frac{27s^6}{8}$

D) $\frac{3s^{12}}{2r^6}$

48) Simplify the radical. Assume that all variables represent positive real numbers.

$$\sqrt{99zt^{13}}$$

A) $3t\sqrt{11zt^{11}}$

B) $9t^6\sqrt{11zt}$

C) $3t^6\sqrt{11zt}$

D) $3zt^6\sqrt{33t}$

49) Simplify the radical.

$$\sqrt[3]{144}$$

A) $2\sqrt[3]{144}$

B) $2\sqrt[3]{18}$

C) $8\sqrt[3]{72}$

D) $8\sqrt[3]{18}$

50) Simplify the radical. Assume that all variables represent positive real numbers.

$$\sqrt[4]{729x^{12}y^{14}}$$

A) $27x^6y^7$

B) $x^6y^7\sqrt[4]{729}$

C) $3x^3y^3\sqrt[4]{9y^2}$

D) $3x^3y^3\sqrt[4]{9x^8y^{10}}$

51) Simplify the radical. Assume that all variables represent positive real numbers.

$$\sqrt{\frac{270z^{15}}{3z^4}}$$

A) $3\sqrt{10z^{11}}$

B) $9z^5\sqrt{10z}$

C) $3z^5\sqrt{10z}$

D) $3z\sqrt{10z^9}$

52) Add or subtract the radical expressions as indicated.

$$\sqrt{12x} - 5\sqrt{3y} + \sqrt{48x}$$

A) $6\sqrt{3x} - 5\sqrt{3y}$

B) $2\sqrt{15x} - 5\sqrt{3y}$

C) $\sqrt{60x + 15y}$

D) $\sqrt{3xy}$

53) Multiply the radical expressions and simplify your answer.

$$-3\sqrt{6x^6y^3} \cdot 2\sqrt{10xy^6}$$

A) $-12\sqrt{15x^7y^9}$

B) $-24x^3y^4\sqrt{15xy}$

C) $-24\sqrt{x^5y^7}$

D) $-12x^3y^4\sqrt{15xy}$

54) Multiply the radical expressions.

$$(4\sqrt{6} + \sqrt{2})(2\sqrt{10} - 3\sqrt{8})$$

A) $16\sqrt{15} + 4\sqrt{5} - 48\sqrt{3} - 12$

B) -16

C) $32\sqrt{15} + 8\sqrt{5} - 192\sqrt{3} - 12$

D) $16\sqrt{15} - 12$

55) Multiply.

$$(\sqrt{11} + x)(\sqrt{11} - x)$$

A) $11 - x^2$

B) $\sqrt{11} - x^2$

C) $11 + x^2$

D) $\sqrt{22} - x^2$

56) Multiply.

$$(9 - \sqrt{5})^2$$

A) 76

B) $86 - 18\sqrt{5}$

C) 56

D) $76 - 18\sqrt{5}$

57) Rationalize the denominator.

$$\frac{35}{\sqrt{7x}}$$

A) $\frac{35\sqrt{7x}}{7x}$

B) $\frac{5\sqrt{7x}}{x}$

C) $\frac{\sqrt{7x}}{35}$

D) Already rationalized

58) Simplify the expression in terms of i .

$$\sqrt{-200}$$

A) $10i\sqrt{2}$

B) $10\sqrt{2}i$

C) $-10i\sqrt{2}$

D) $100i\sqrt{2}$

59) Rationalize the denominator.

$$\frac{3}{9 - \sqrt{5}}$$

A) $\frac{27 + 3\sqrt{5}}{56}$

B) $\frac{27 + 3\sqrt{5}}{76}$

C) $\frac{3\sqrt{5}}{4}$

D) $\frac{3}{9 + \sqrt{5}}$

60) Solve the equation.

$$\sqrt{8t + 7} + 8 = 0$$

A) $\left\{\frac{57}{8}\right\}$

B) $\{-15\}$

C) $\left\{-\frac{71}{8}\right\}$

D) $\{\}$

61) Solve the equation.

$$\sqrt{x^2 + 3x - 10} = x + 5$$

A) $\{0\}$

B) $\{5\}$

C) $\{-5\}$

D) $\{\}$

62) Add. Write the answer in the form $a + bi$.

$$(-17 - 13i) + (4 + 20i)$$

A) $21 + 33i$

B) -6

C) $-13 + 7i$

D) $-6i$

63) Multiply. Write the answer in the form $a + bi$.

$$(-5 - 7i) \cdot (7 + 9i)$$

A) $-98 - 94i$

B) $-35 - 63i$

C) 28

D) $28 - 94i$

64) Simplify.

$$i^{39}$$

A) -1

B) i

C) 1

D) $-i$

65) Solve the equation by using the square root property.

$$3y^2 = -120$$

A) $\{2i\sqrt{30}, -2i\sqrt{30}\}$

B) $\{2\sqrt{10}\}$

C) $\{2i\sqrt{10}, -2i\sqrt{10}\}$

D) $\{2\sqrt{10}, -2\sqrt{10}\}$

66) Solve the equation by using the quadratic formula.

$$z^2 + 16 = 14z$$

A) $\{-14 + 2\sqrt{33}, -14 - 2\sqrt{33}\}$

B) $\{7 + 2\sqrt{33}, 7 - 2\sqrt{33}\}$

C) $\{-7 + \sqrt{33}, -7 - \sqrt{33}\}$

D) $\{7 + \sqrt{33}, 7 - \sqrt{33}\}$

67) Solve the equation by using the quadratic formula.

$$w(w - 2) = -20$$

A) $\{1 + \sqrt{19}, 1 - \sqrt{19}\}$

B) $\{1 + 2i\sqrt{19}, 1 - 2i\sqrt{19}\}$

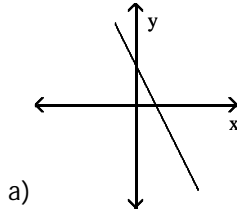
C) $\{-2 + 2\sqrt{19}, -2 - 2\sqrt{19}\}$

D) $\{1 + i\sqrt{19}, 1 - i\sqrt{19}\}$

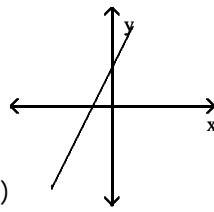
SHORT ANSWER. Show algebraic work in the space provided. Answers without appropriate work may not receive credit. Place answers in blanks as appropriate.

68) State the slope of the lines a) $x = -4$ and b) $y = 6$.

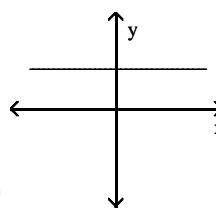
69) For each state whether the graph has a slope that is positive, negative, zero, or undefined.



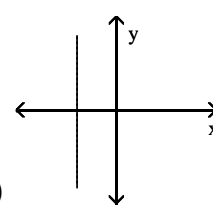
a)



b)



c)



d)

SHORT ANSWER. Show algebraic work in the space provided. Answers without appropriate work may not receive credit. Place answers in blanks as appropriate.

70) Write an equation of the line satisfying the given conditions. Write the answer in slope-intercept form.
The line contains the point $(1, 11)$ and is parallel to $2y - 4x = 12$.

71) Write an equation of the line satisfying the given conditions. Write the answer in slope-intercept form.
The line is perpendicular to the line defined by $y = 2x - 8$ and passes through the point $(4, 3)$.

72) Find the x -intercept and the y -intercept. Use these to graph the line.
 $4x - 3y = 12$

73) Graph the linear equation by using the y -intercept and the slope.
 $y = \frac{5}{3}x - 2$

74) Graph the linear equation.
 $f(x) = -2$

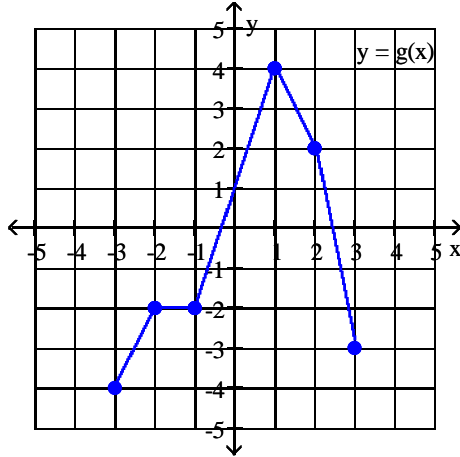
75) Graph of the solution set of the inequality.
 $-x - 2y \geq -5$

76) Graph the solution set of the inequality.
 $y < -3x + 4$

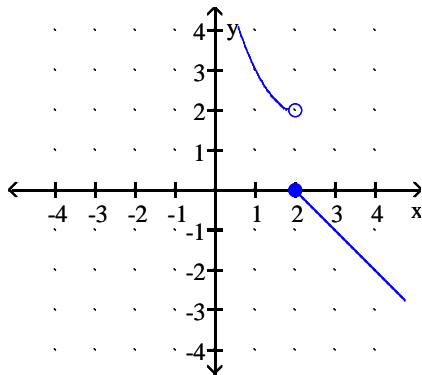
77) Identify the domain and range of the function.

$$g(x) = \{(-15, -10), (-16, 2), (-9, 15), (13, 8)\}$$

78) Find $g(-2)$.



79) For what value(s) of x is $f(x) = 1$?



80) Solve by using the substitution method.

$$x - 4y = 4$$

$$-3x + 7y = 8$$

81) Solve the system by the addition method.

$$4x - y = 19$$

$$5x - 2y = 20$$

82) A chemist wants to mix a 15% acid solution with a 43% acid solution to get 14 L of a 35% acid solution. How many liters of the 15% solution and how many liters of the 43% solution should be mixed?

83) It takes a barge 2 hours to travel 12 miles downstream with the current and 6 hours to return against the current. Find the speed of the barge in still water and the speed of the current.

84) Multiply the polynomials by using the distributive property.

$$(m + 7n)(m^2 - 2mn + 3n^2)$$

85) Identify the restricted values of the rational expression.

$$\frac{y - 15}{y^2 - 8y - 20}$$

86) Multiply the polynomials by using the distributive property.

$$(m + 2n)(m^2 + 7mn - 2n^2)$$

87) Divide the polynomials by using long division.

$$(x^3 + 3x^2 - 52x - 3) \div (x - 6)$$

88) Factor out the greatest common factor.

$$12t^2u + 8tu^2 + 16tu$$

89) Factor the polynomial(if possible).

$$2x^5 + 6x^4 - 4x^3 - 12x^2$$

90) Factor the trinomial completely by using any method.

$$a^2 + 16a + 48$$

91) Factor the trinomial completely by using any method.

$$4x^2 - 9x - 28$$

92) Factor the trinomial completely by using any method.

$$-6m^2 + 42m - 72$$

93) Factor the trinomial completely by using any method.

$$16x^2 - 56x + 49$$

94) Factor the binomial or identify it as prime.

$$5z^4 - 405$$

95) Factor the binomial or identify it as prime.

$$8u^3 + 27$$

96) Factor the binomial or identify it as prime.

$$64w^3 - 125$$

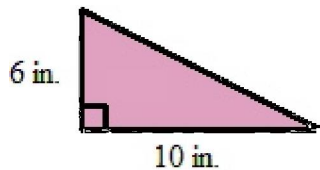
97) Solve the equation by factoring.

$$3x^2 + 20x = -25$$

98) Solve the equation by factoring.

$$3x^3 - 5x^2 - 12x + 20 = 0$$

99) Find the length of the third side of the triangle. Write your answer as a simplified radical.



100) Solve by setting up a quadratic equation:

A flagpole is supported by a wire fastened 45 feet from its base. The wire is 15 feet longer than the height it reaches on the flagpole. Find the length of the wire.

101) Solve by setting up a quadratic equation:

A rectangular garden is to cover 378 square feet of area. If the width is 3 feet less than the length, find the dimensions of the pen.

102) Find the domain. Write answer using interval notation.

$$f(x) = \sqrt{3 - x}$$

103) Multiply the rational expressions.

$$\frac{6t^2 - 4t - 2}{3} \cdot \frac{9t^2 + 45t}{3t^3 + t^2}$$

104) Divide the rational expressions.

$$\frac{2y - 1}{y^2 - 64} \div \frac{1 - 2y}{y + 8}$$

105) Subtract.

$$\frac{7x + 9}{6x - 18} - \frac{x + 2}{x - 3}$$

106) Simplify the complex fraction.

$$\frac{\frac{x-4}{7x}}{\frac{7x-28}{49}}$$

107) Simplify the complex fraction.

$$\frac{\frac{8}{x} + \frac{5}{x^2}}{\frac{64}{x^2} - \frac{25}{x}}$$

108) A kayaker can row 6 miles upstream, against a 2 mph current, in one hour more than he can row 7 miles downstream. What is his average speed in still water?

109) A postal worker can sort a day's worth of mail in 9 hours. With her supervisor helping, it takes 3 hours. How long would it take the supervisor working alone?

110) Simplify the expression by using the properties of rational exponents. Write the final answer using positive exponents only. Assume all variables represent positive real numbers.

$$\frac{q^{2/9}}{q^{6/7}}$$

111) Rationalize the denominator.

$$\frac{7 - 9\sqrt{2}}{\sqrt{2} + 1}$$

112) Multiply. Write the answer in the form $a + bi$.

$$(-10 - 8i) \cdot (4 + 2i)$$

113) Divide the complex numbers. Write the answer in the form $a + bi$.

$$\frac{-4 + 3i}{5 - 4i}$$

114) Solve the equation by using the quadratic formula.

$$6y + 3 = -4y^2$$

Answer Key

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- 1) A
- 2) D
- 3) B
- 4) C
- 5) B
- 6) B
- 7) A
- 8) B
- 9) D
- 10) C
- 11) C
- 12) B
- 13) D
- 14) C
- 15) A
- 16) B
- 17) A
- 18) C
- 19) D
- 20) C
- 21) D
- 22) B
- 23) B
- 24) D
- 25) A
- 26) C
- 27) B
- 28) D
- 29) C
- 30) B
- 31) A
- 32) B
- 33) B
- 34) A
- 35) C
- 36) D
- 37) D
- 38) A
- 39) B
- 40) C
- 41) C
- 42) B
- 43) B
- 44) D
- 45) C
- 46) D
- 47) B
- 48) C
- 49) B
- 50) C

Answer Key

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51) C

52) A

53) D

54) A

55) A

56) B

57) B

58) A

59) B

60) D

61) C

62) C

63) D

64) D

65) C

66) D

67) D

68) a) undefined b) 0

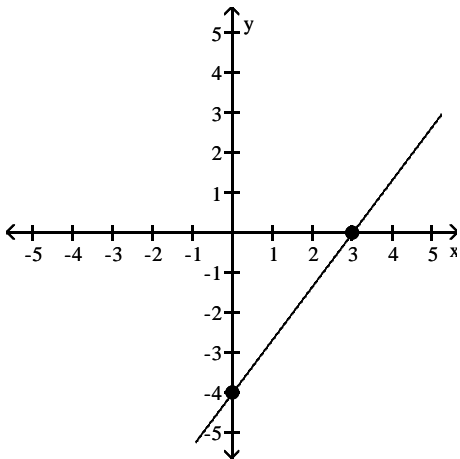
69) a) negative b) positive

c) 0 d) undefined

70) $y = 2x + 9$

71) $y = -\frac{1}{2}x + 5$

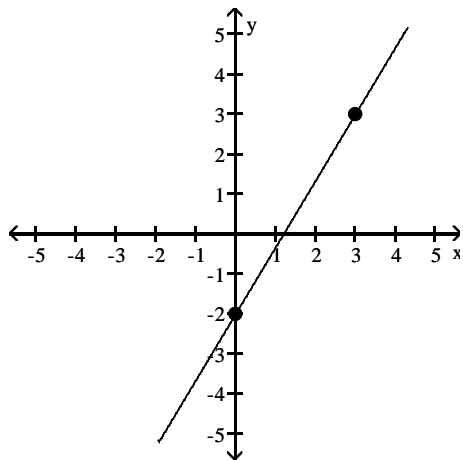
72) x-intercept: (3, 0); y-intercept: (0, -4)



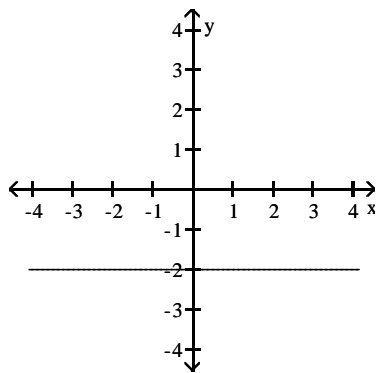
Answer Key

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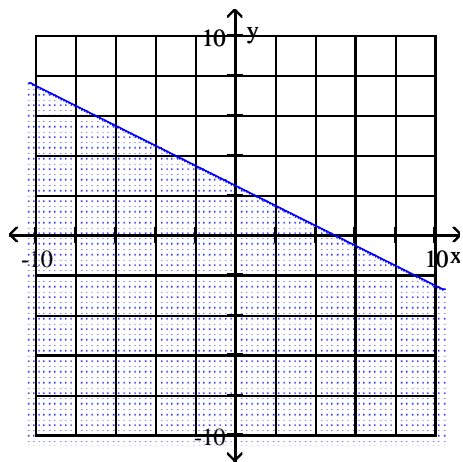
73)



74)



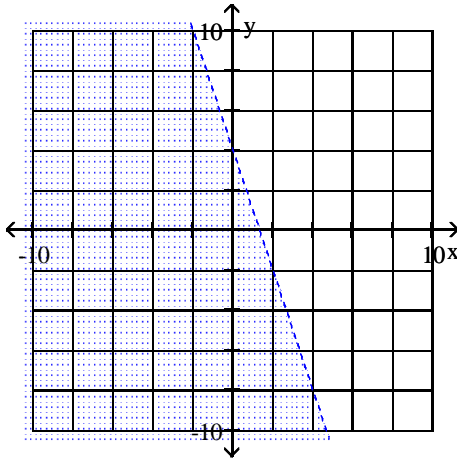
75)



Answer Key

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76)



77) Domain = $\{-15, -16, -9, 13\}$; Range = $\{-10, 2, 15, 8\}$

78) $g(-2) = -2$

79) There are no such values of x .

80) $(-12, -4)$

81) $(6, 5)$

82) 4 L of the 15% solution; 10 L of the 43% solution

83) barge: 4 mph; current: 2 mph

84) $m^3 + 5m^2n - 11mn^2 + 21n^3$

85) $y = 10, y = -2$

86) $m^3 + 9m^2n + 12mn^2 - 4n^3$

87) $x^2 + 9x + 2 + \frac{9}{x - 6}$

88) $4tu(3t + 2u + 4)$

89) $2x^2(x + 3)(x^2 - 2)$

90) $(a + 12)(a + 4)$

91) $(4x + 7)(x - 4)$

92) $-6(m - 4)(m - 3)$

93) $(4x - 7)^2$

94) $5(z^2 + 9)(z - 3)(z + 3)$

95) $(2u + 3)(4u^2 - 6u + 9)$

96) $(4w - 5)(16w^2 + 20w + 25)$

97) $\left\{-\frac{5}{3}, -5\right\}$

98) $\left\{-2, 2, \frac{5}{3}\right\}$

99) $2\sqrt{34}$ in.

Answer Key

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100) 75 ft

101) length = 21 ft; width = 18 ft

102) $(-\infty, 3]$

103) $\frac{6(t-1)(t+5)}{t}$

104) $\frac{1}{8-y}$

105) $\frac{1}{6}$

106) $\frac{1}{x}$

107) $\frac{8x+5}{64-25x}$

108) 5 mph

109) 4.5 hours

110) $\frac{1}{\frac{40}{63}q}$

111) $16\sqrt{2} - 25$

112) $-24 - 52i$

113) $-\frac{32}{41} - \frac{1}{41}i$

114) $\left\{ -\frac{3}{4} + \frac{i\sqrt{3}}{4}, -\frac{3}{4} - \frac{i\sqrt{3}}{4} \right\}$