

There are sixty problems on the final exam. A scientific calculator is allowed on the final exam. However, no graphing or phone calculators are allowed.

Make sure that you can both set up and solve word problems.

For additional review, attend one of the Fall or Spring review sessions. Questions regarding specific problems, talk to your instructor or visit the Tutoring and Learning Center (TLC - Rm. C2010).

Study well!

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

- 1) Simplify: $12 \div 3 \cdot 4 - 6 \cdot 8$ 1) _____
 A) -47 B) -40 C) -32 D) 80

- 2) Simplify: $\frac{|6(-3)| - |1 - 8|}{|10(2)|}$ 2) _____
 A) $\frac{11}{20}$ B) $-\frac{11}{20}$ C) $\frac{5}{4}$ D) $-\frac{5}{4}$

- 3) Simplify: $[20 - (4 + 6) \div 2] - [1 + 18 \div 3]$ 3) _____
 A) 5 B) 15 C) 3 D) 8

- 4) Simplify: $3 + [2(10 - 6)^2 - 5]$ 4) _____
 A) 30 B) 81 C) 126 D) 62

- 5) Evaluate $x + yz$ when $x = 5$, $y = -4$, and $z = -7$. 5) _____
 A) -23 B) 33 C) 23 D) -7

- 6) If $x = -4$ and $y = -2$, find $x^4 - 4y$. 6) _____
 A) -246 B) 264 C) 248 D) -8

- 7) Which of the following are true? 7) _____
 A) The product of two negative numbers is always positive.
 B) The sum of a negative number and a positive number is always negative.
 C) The sum of two numbers that have the same sign also has the same sign.
 D) Both choices A and C are correct.

- 8) What is the reciprocal of $\frac{7}{9}$? 8) _____
 A) $-\frac{9}{7}$ B) $-\frac{7}{9}$ C) 9 D) $\frac{9}{7}$

- 9) -46 belongs to which set(s) of numbers? 9) _____
 A) whole, real B) real
 C) integer, rational, real D) irrational, real

- 10) $\frac{7}{9}$ belongs to which set(s) of numbers? 10) _____
 A) real B) rational, real
 C) whole, real D) irrational, real
- 11) $\sqrt{20}$ belongs to which set(s) of numbers? 11) _____
 A) irrational, real B) whole, real
 C) integer, real D) rational, real
- 12) Which property is illustrated by $3 \cdot 6 = 6 \cdot 3$? 12) _____
 A) Identity Property of Multiplication
 B) Commutative Property of Multiplication
 C) Distributive Property
 D) Associative Property of Multiplication
- 13) Which property is illustrated by $13 + (5 + 18) = (13 + 5) + 18$? 13) _____
 A) Identity Property of Addition B) Commutative Property of Addition
 C) Distributive Property D) Associative Property of Addition
- 14) Use the distributive property to multiply $9(5x - 9)$. 14) _____
 A) $14x - 18$ B) $45x - 9$ C) $126x$ D) $45x - 81$
- 15) Simplify: $6a - 3a - a - 12$ 15) _____
 A) $3a - 12$ B) $2a - 12$ C) $3a - 13$ D) $3a - a - 12$
- 16) Simplify: $(11z + 11) - (2z - 9)$ 16) _____
 A) $9z + 2$ B) $9z + 20$ C) $9z - 20$ D) $13z + 20$
- 17) Solve for x: $7x + 9 + 8x + 3 = 2$ 17) _____
 A) $\frac{2}{3}$ B) $\frac{8}{15}$ C) $-\frac{2}{3}$ D) 10
- 18) Solve for k: $\frac{2}{15}k = \frac{2}{5}$ 18) _____
 A) 3 B) 7 C) 17 D) 16
- 19) Solve for y: $-7y + 6 + 7(y + 1) = 6y - 4$ 19) _____
 A) $y = 6$ B) $y = \frac{3}{4}$ C) $y = \frac{17}{6}$ D) $y = -\frac{1}{2}$
- 20) Solve for x: $\frac{3}{4}x + \frac{1}{8} = -\frac{1}{4}x - \frac{1}{6}$ 20) _____
 A) $x = \frac{7}{24}$ B) $x = -\frac{1}{24}$ C) $x = -\frac{7}{24}$ D) $x = -\frac{1}{7}$

- 21) Solve for y: $\frac{5(y-5)}{3} = 2y - 5$ 21) _____
 A) 10 B) -40 C) 40 D) -10
- 22) Solve for x: $2(x+5) + 105 = 7x - 5(x-9)$ 22) _____
 A) 150 B) 60
 C) no solution D) all real numbers
- 23) Translate into an expression: "Four times the sum of a number and eight." 23) _____
 A) $4x+8$ B) $4(x+8)$ C) $8x+4$ D) $8(x+4)$
- 24) Translate into an algebraic expression: "Nine less than three-fourths of a number." 24) _____
 A) $9x - \frac{3}{4}$ B) $\frac{3}{4} - 9x$ C) $9 - \frac{3x}{4}$ D) $\frac{3x}{4} - 9$
- 25) Write the following as an equation, using x for the unknown number. Then solve. 25) _____
 The sum of four times a number and 3 is equal to the difference of twice the number and 8. Find the number.
 A) $4(x+3) = 2x - 8; -10$ B) $4x+3 = 2x - 8; \frac{11}{2}$
 C) $4x+3 = 2x - 8; -\frac{11}{2}$ D) $4x+3 = 2x+8; \frac{5}{2}$
- 26) Given the word problem: The length of a rectangular room is 3 feet longer than twice the width. 26) _____
 If the room's perimeter is 198 feet, what are the room's dimensions?
 What formula could be used to set up this word problem?
 A) $A = L \cdot W$ B) $a^2 + b^2 = c^2$ C) $D = R \cdot T$ D) $P = 2L + 2W$
- 27) The length of a rectangular room is 3 feet longer than twice the width. If the room's perimeter is 198 feet, what are the room's dimensions? 27) _____
 A) Width = 64 ft.; length = 134 ft. B) Width = 37 ft.; length = 77 ft.
 C) Width = 48 ft.; length = 51 ft. D) Width = 32 ft.; length = 67 ft.
- 28) A 9-ft. board is cut into 2 pieces so that one piece is 5 feet longer than 3 times the shorter piece. 28) _____
 If the shorter piece is x feet long, find the lengths of both pieces.
 A) shorter piece: 15 ft.; longer piece: 32 ft. B) shorter piece: 1 ft.; longer piece: 8 ft.
 C) shorter piece: 4.5 ft.; longer piece: 27 ft. D) shorter piece: 22 ft.; longer piece: 27 ft.
- 29) Two angles are complementary if their sum is 90° . If the measure of the first angle is x° , and the 29) _____
 measure of the second angle is $(3x - 2)^\circ$, find the measure of each angle.
 A) 1st angle = 22° ; 2nd angle = 68° B) 1st angle = 23° ; 2nd angle = 67°
 C) 1st angle = 31° ; 2nd angle = 59° D) 1st angle = 22° ; 2nd angle = 64°
- 30) The number of video stores in a region recently decreased from 138 to 99. Find the percent 30) _____
 decrease. Round your final answer to one decimal place.
 A) 71.7% B) 39.4% C) 253.8% D) 28.3%

31) Solve for W: $P = 2L + 2W$

A) $W = \frac{P-L}{2}$

B) $W = P - L$

C) $W = P - 2L$

D) $W = \frac{P-2L}{2}$

31) _____

32) Solve the following inequality: $1 < 2x + 3 < 6$

Write your answer in interval notation.

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

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

C) $\left(-1, \frac{3}{2}\right)$

D) $(-1, \infty)$

32) _____

33) Solve the following inequality: $x - 6 > 5x + 6$

A) $x > -3$

B) $x < -3$

C) $x > 3$

D) $x < 3$

33) _____

34) Solve the following inequality: $25x - 45 \leq 5(4x - 11)$

A) $x > -2$

B) $x \geq -2$

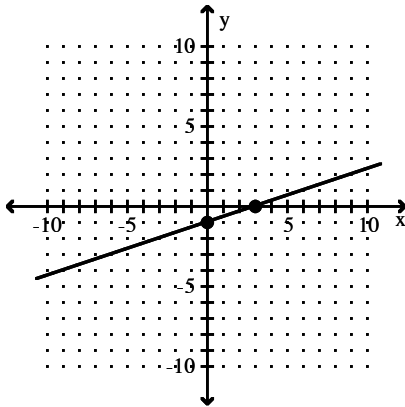
C) $x \leq -2$

D) $x < -2$

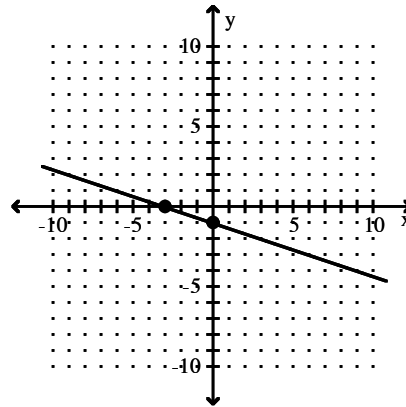
34) _____

35) Graph using intercepts: $-2x - 6y = 6$

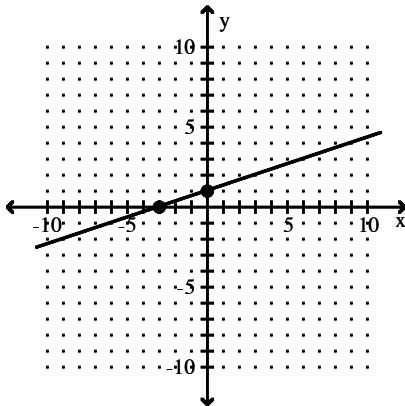
A)



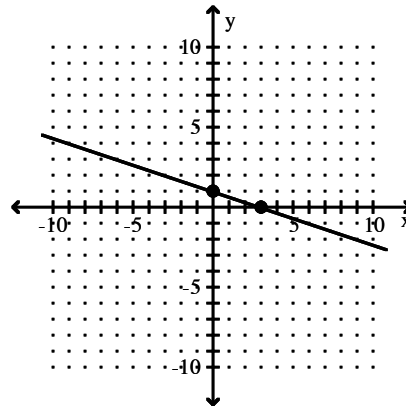
B)



C)



D)



35) _____

36) Find the slope of the line: $11x - 6y = 66$

A) $m = -\frac{11}{6}$

B) $m = \frac{11}{6}$

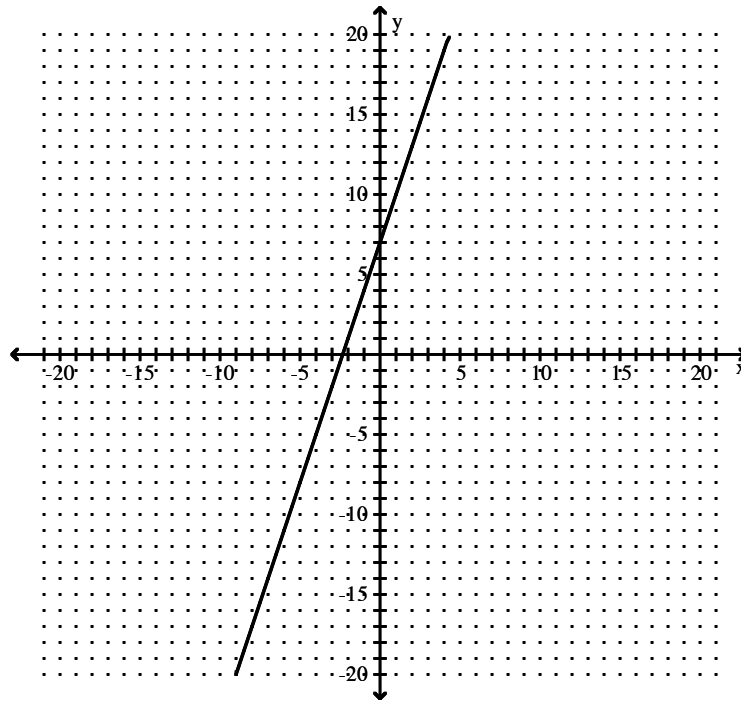
C) $m = \frac{6}{11}$

D) $m = 11$

36) _____

37) Find the slope of the line.

37) _____



- A) -3 B) $\frac{1}{3}$ C) $-\frac{1}{3}$ D) 3

38) Zero is the slope of a _____.

38) _____

- A) horizontal line B) vertical line
C) point D) Zero is never used for slope.

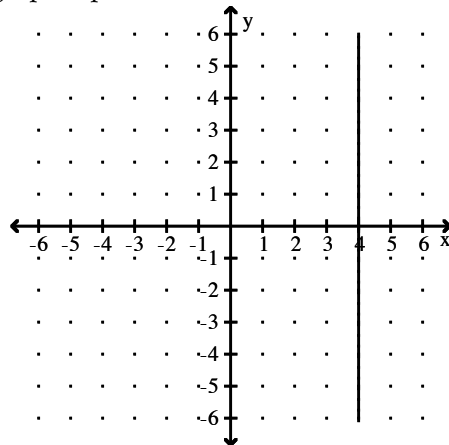
39) Which of the following are true?

39) _____

- A) All slopes are either positive, zero, or negative.
B) x-intercepts always have an x-coordinate of 0.
C) The slope of a vertical line is undefined.
D) There are three quadrants in a Cartesian coordinate system.

40) The following graph represents:

40) _____

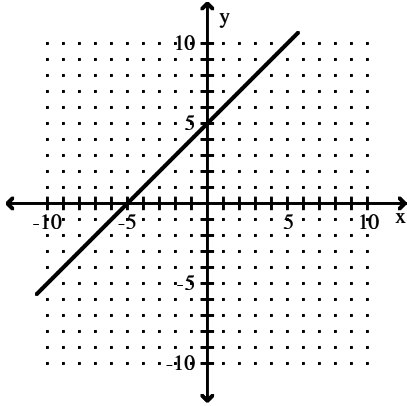


- A) $y = x + 4$ B) $y = 4x$ C) $x = 4$ D) $y = 4$

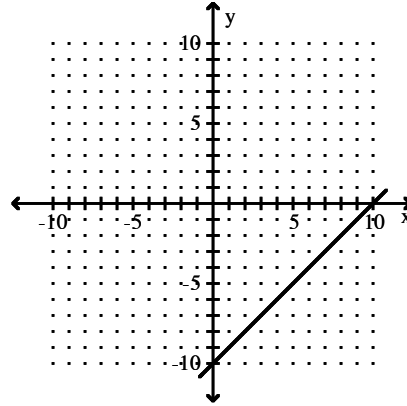
41) Graph the linear equation: $y = \frac{1}{2}x + 5$

41) _____

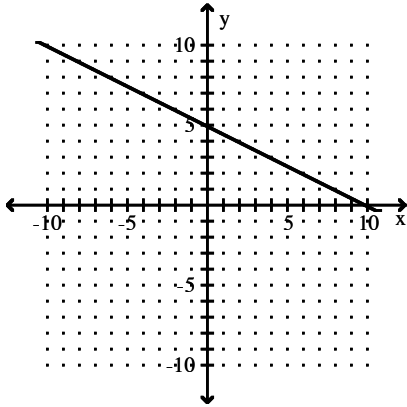
A)



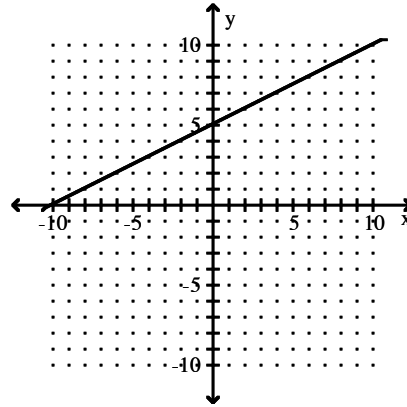
B)



C)



D)



42) Find the slope of the line: $x = -5$

42) _____

A) 0

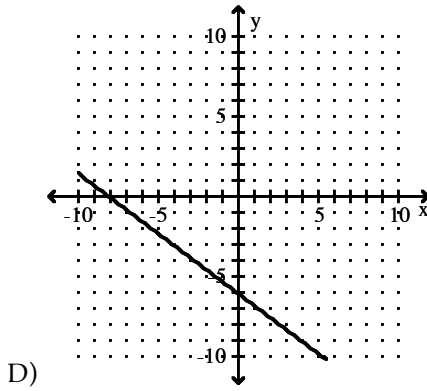
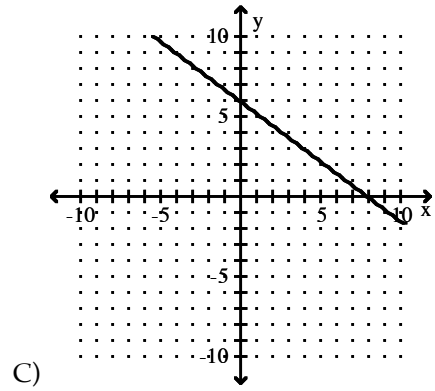
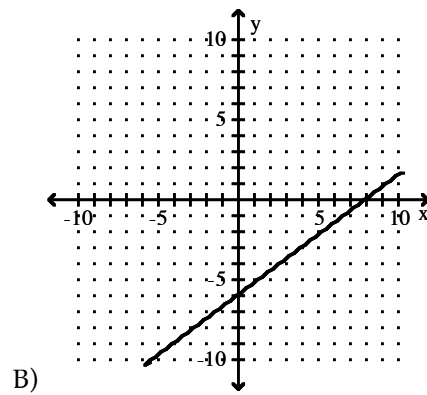
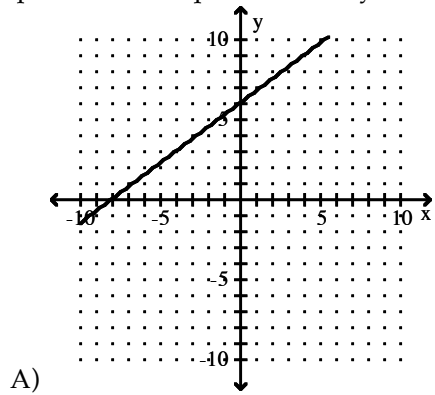
B) -5

C) 5

D) undefined

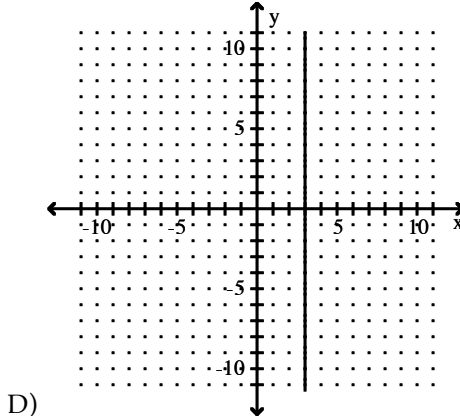
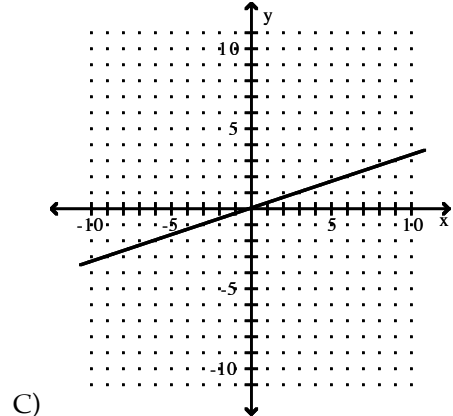
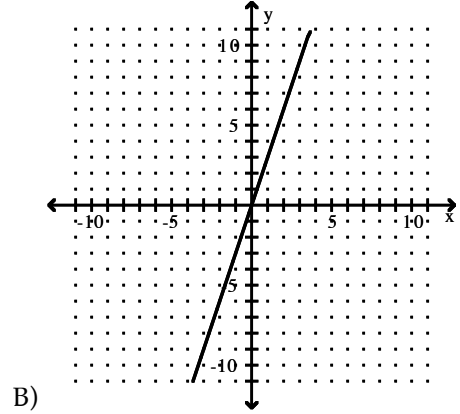
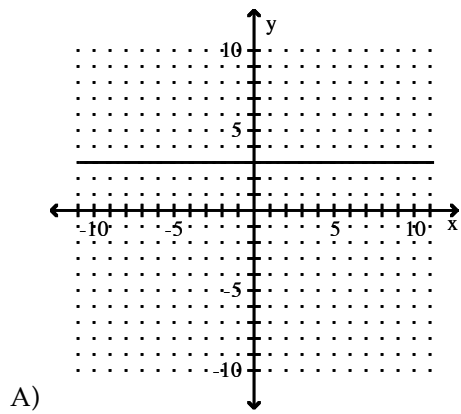
43) Graph the linear equation: $3x + 4y = -24$

43) _____



44) Graph the linear equation: $x - 3 = 0$

44) _____



45) Find the equation of the line through $(-5, -1)$ and $(3, 6)$. 45) _____

A) $7x - 8y = -27$

B) $4x + 3y = -6$

C) $-7x - 8y = -27$

D) $-4x - 3y = -6$

46) Determine whether the pair of lines is parallel, perpendicular, or neither. 46) _____

$4x - 9y = 4$

$18x + 9y = -8$

A) parallel

B) perpendicular

C) neither

47) Find the slopes of the lines that are (a) parallel to and (b) perpendicular to the line passing through the pair of points $(-6, -10)$ and $(1, 4)$. 47) _____

A) (a) 2; (b) $-\frac{1}{2}$

B) (a) $\frac{1}{2}$; (b) -2

C) (a) 2; (b) -2

48) Write the equation of a line perpendicular to $y = -4$ that passes through $(8, 12)$. 48) _____

A) $y = 12$

B) $x = 8$

C) $x = -\frac{1}{8}$

D) $y = -\frac{1}{2}x + 16$

49) Write the equation of a line parallel to $y = -10$ that passes through $(-5, 2)$. 49) _____

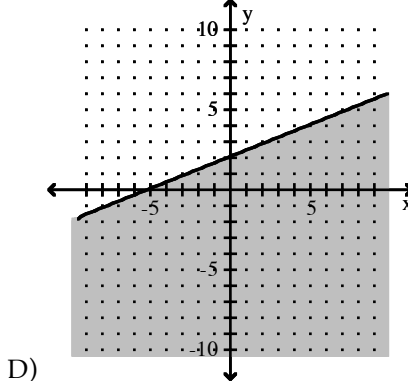
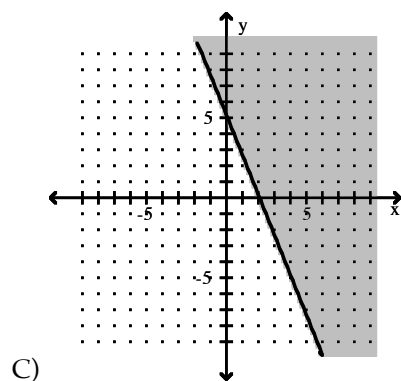
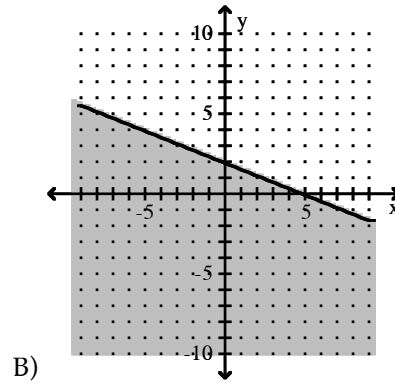
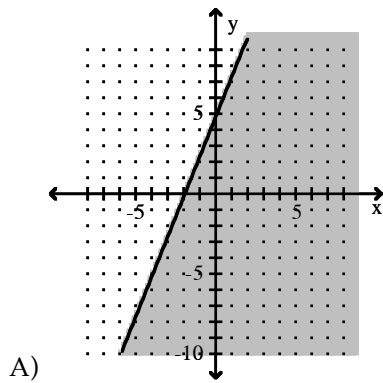
A) $y = -\frac{12}{5}x - 10$

B) $y = -5$

C) $x = -5$

D) $y = 2$

50) Graph the solution: $2x + 5y \leq 10$ 50) _____



- 51) Find the domain and the range of the relation: $\{(9, 1), (-10, 0), (-2, -2), (13, -10)\}$ 51) _____
 A) domain: $\{-10, -2, 9, 13\}$; range: $\{0, 1\}$
 B) domain: $\{-2, 0, 9, 13\}$; range: $\{-10, -2, 1, 13\}$
 C) domain: $\{-10, -2, 9, 13\}$; range: $\{-10, -2, 0, 1\}$
 D) domain: $\{-10, 0, 1, 9\}$; range: $\{-10, -2, 13\}$
- 52) If $f(x) = |x - 2|$, find $f(17)$. 52) _____
 A) 19 B) -15 C) 15 D) -19
- 53) If $f(x) = x^2 - 4x - 6$, find $f(-2)$. 53) _____
 A) 18 B) -10 C) 2 D) 6
- 54) True or False: If the two equations in a system of linear equations are added and the result is $3 = 0$, the system has no solution. 54) _____
 A) True B) False
- 55) Solve the system of equations. State the y -value of the ordered pair solution. 55) _____

$$\begin{cases} x = -6y + 24 \\ -6x + 5y = 61 \end{cases}$$

 A) 6 B) -5 C) 5 D) -6
- 56) Solve the system of equations: $\begin{cases} 2x + 5y = 4 \\ -5x + 3y = 21 \end{cases}$ 56) _____
 A) $(3, 2)$ B) $(-3, -2)$ C) $(3, -2)$ D) $(-3, 2)$
- 57) Solve the system of equations: $\begin{cases} 3x - 8y = 7 \\ 9x - 24y = 35 \end{cases}$ 57) _____
 A) $\left(\frac{7}{2}, -\frac{21}{16}\right)$
 B) $(7, 35)$
 C) infinitely many solutions $\{(x, y) \mid 3x - 8y = 7\}$
 D) no solution
- 58) An order of 3 orders of fries, 5 hamburgers, and 4 drinks costs \$17. An order of 4 orders of fries, 4 hamburgers, and 5 drinks costs \$17. All drinks are \$1. Determine the system of equations that represents the function. 58) _____
 A) $\begin{cases} 3x + 5y + 4 = 13 \\ 4x + 4y + 5 = 12 \end{cases}$ B) $\begin{cases} 3x + 5y + 1 = 17 \\ 4x + 4y + 1 = 17 \end{cases}$
 C) $\begin{cases} 3x + 5y + 4 = 17 \\ 4x + 4y + 5 = 17 \end{cases}$ D) $\begin{cases} (3x)(5y) + 4 = 17 \\ (4x)(4y) + 5 = 17 \end{cases}$
- 59) The three angles in a triangle always add up to 180° . If one angle in a triangle is 78° and the second is 5 times the third, what are the three angles? 59) _____
 A) $78^\circ, 83^\circ, 19^\circ$ B) $78^\circ, 84^\circ, 18^\circ$ C) $78^\circ, 86^\circ, 16^\circ$ D) $78^\circ, 85^\circ, 17^\circ$

60) Khang and Hector live 38.4 miles apart in southeastern Missouri. They decide to bicycle towards each other and meet somewhere in between. Hector's rate of speed is 60% of Khang's. They start out at the same time and meet 3 hours later. Find Hector's rate of speed. 60) _____
 A) 24 mph B) 8 mph C) 38.4 mph D) 4.8 mph

61) A chemist needs 130 milliliters of a 46% solution but has only 26% and 91% solutions available. Find how many milliliters of each that should be mixed to get the desired solution. 61) _____
 A) 95 ml of 26%; 35 ml of 91% B) 40 ml of 26%; 90 ml of 91%
 C) 90 ml of 26%; 40 ml of 91% D) 95 ml of 26%; 40 ml of 91%

62) A certain aircraft can fly 1120 miles with the wind in 4 hours and travel the same distance against the wind in 7 hours. What is the speed of the wind? 62) _____
 A) 80 mph B) 60 mph C) 100 mph D) 40 mph

63) If $x = -4$ and $y = 4$, find z and state the solution to the system of equations. Write your answer as an ordered triple. 63) _____

$$\begin{cases} x + y + z = -1 \\ x - y + 3z = -11 \\ 3x + y + z = -9 \end{cases}$$

 A) $(-4, 4, -1)$ B) $(-1, 4, -4)$ C) $(-4, 4, 1)$ D) $(1, 4, -4)$

64) What is the y -coordinate for the solution to the following system? 64) _____

$$\begin{cases} 5x + 2y + z = -11 \\ 2x - 3y - z = 17 \\ 7x + y + 2z = -4 \end{cases}$$

 A) -6 B) 0 C) 1 D) 6

65) Simplify and express the answer using positive exponents: $\frac{y^9}{y^4}$ 65) _____
 A) $\frac{1}{y^5}$ B) y^5 C) y^7 D) y^{13}

66) Multiply: $(8x^8)(-2x^5)$ 66) _____
 A) $-16x^{13}$ B) $-16x^{40}$ C) $16x^{13}$ D) $16x^{40}$

67) Simplify and express the answer using positive exponents: $\left(\frac{xy^3}{x^3y}\right)^{-2}$ 67) _____
 A) $\frac{1}{x^8y^8}$ B) $\frac{x^4}{y^4}$ C) $\frac{1}{x^5y^7}$ D) $\frac{y^4}{x^4}$

68) Simplify and express the answer using positive exponents: $\frac{4^4x^{-6}y^2}{4^7x^{-9}y^4}$ 68) _____
 A) $\frac{x^3}{64y^2}$ B) $\frac{1}{64x^9y^2}$ C) $\frac{64}{x^3y^2}$ D) $\frac{3x^3}{y^2}$

- 69) Subtract $(6x + 3)$ from the sum of $(9x^2 + 8x + 1)$ and $(x^3 - 3)$. 69) _____
 A) $-x^3 - 9x^2 - 2x + 5$ B) $x^3 + 9x^2 + 2x - 5$
 C) $x^3 - 9x^2 - 2x + 5$ D) $x^3 - 9x^2 - 2x - 5$
- 70) Multiply: $(2x + 3)(x + 8)$ 70) _____
 A) $x^2 + 19x + 18$ B) $2x^2 + 19x + 24$ C) $2x^2 + 18x + 24$ D) $x^2 + 24x + 19$
- 71) Simplify: $(8x - 9)^2$ 71) _____
 A) $64x^2 - 144x + 81$ B) $8x^2 - 144x + 81$
 C) $64x^2 + 81$ D) $8x^2 + 81$
- 72) Multiply: $(8x - 1)(x^2 - 4x + 1)$ 72) _____
 A) $8x^3 - 32x^2 + 8x + 1$ B) $8x^3 - 33x^2 + 12x - 1$
 C) $8x^3 + 33x^2 - 12x + 1$ D) $8x^3 - 31x^2 + 4x - 1$
- 73) Multiply: $(x^2 - 12b)(x^2 + 12b)$ 73) _____
 A) $x^2 - 144b^2$ B) $x^4 - 24x^2b + 144b^2$
 C) $x^4 - 144b^2$ D) $x^4 + 24x^2b + 144b^2$
- 74) Multiply: $(9x - 1)(x^2 - 7x + 1)$ 74) _____
 A) $9x^3 + 64x^2 - 16x + 1$ B) $9x^3 - 63x^2 + 9x + 1$
 C) $9x^3 - 64x^2 + 16x - 1$ D) $9x^3 - 62x^2 + 2x - 1$
- 75) Divide: $\frac{8x^3 - 8}{2x + 2}$ 75) _____
 A) $4x^2 - 4x + 4$ B) $4x^2 - 4x + 4 - \frac{16}{2x + 2}$
 C) $4x^2 + 4x + 4$ D) $4x^2 - 4x + 4 - \frac{8}{2x + 2}$
- 76) Factor completely: $32m^9 + 24m^6 + 40m^4$ 76) _____
 A) $m^4(32m^5 + 24m^2 + 40)$ B) $-m^4(-32m^5 + 24m^2 - 40)$
 C) $8m^4(4m^5 + 3m^2 + 5)$ D) $8(4m^9 + 3m^6 + 5m^4)$
- 77) Factor completely: $4a^2 + 4ab - 7a - 7b$ 77) _____
 A) $(4a + 7)(a + b)$ B) $(4a - 7)(a - b)$ C) $(4a + 7)(a - b)$ D) $(4a - 7)(a + b)$
- 78) Factor, if possible: $x^2 + 11x + 28$ 78) _____
 A) $(x - 4)(x + 7)$ B) $(x + 4)(x + 7)$ C) $(x - 4)(x + 1)$ D) prime

Answer Key

Testname: MATH 094 FINAL EXAM REVIEW

- | | |
|-------|-------|
| 1) C | 51) C |
| 2) A | 52) C |
| 3) D | 53) D |
| 4) A | 54) A |
| 5) B | 55) C |
| 6) B | 56) D |
| 7) D | 57) D |
| 8) D | 58) C |
| 9) C | 59) D |
| 10) B | 60) D |
| 11) A | 61) C |
| 12) B | 62) B |
| 13) D | 63) A |
| 14) D | 64) A |
| 15) B | 65) B |
| 16) B | 66) A |
| 17) C | 67) B |
| 18) A | 68) A |
| 19) C | 69) B |
| 20) C | 70) B |
| 21) D | 71) A |
| 22) C | 72) B |
| 23) B | 73) C |
| 24) D | 74) C |
| 25) C | 75) B |
| 26) D | 76) C |
| 27) D | 77) D |
| 28) B | 78) B |
| 29) B | |
| 30) D | |
| 31) D | |
| 32) C | |
| 33) B | |
| 34) C | |
| 35) B | |
| 36) B | |
| 37) D | |
| 38) A | |
| 39) C | |
| 40) C | |
| 41) D | |
| 42) D | |
| 43) D | |
| 44) D | |
| 45) A | |
| 46) C | |
| 47) A | |
| 48) B | |
| 49) D | |
| 50) B | |