



**Math for College Algebra
Summer Math Packet**

This summer math packet is a review of some of the concepts learned in your previous math classes that will be needed for Math for College Algebra. It will assure that all students begin the school year on the same page and with equal opportunity to succeed in Math for College Algebra.

Instructions for completing the packet:

- Please print the packet or use loose leaf paper to complete the packet by hand showing all work. Work must be neat and legible.
- Please use your Algebra I and Algebra II notes or the websites provided to help you if you need reminders on how to complete some practice problems.
- Take notes as you complete your work. You will be given a quiz on this material the first week of school.
- Work on the packet with your friends. Help each other. Every student is responsible for knowing the material in this packet when you return in August. We will review as a team and everyone will be expected to participate.
- Bring your packet to our first class together. It will be collected for a grade. Only packets done with paper and pencil will be accepted.

Helpful Websites:

<http://www.mathtv.com/>

<http://www.purplemath.com/modules/index.htm>

<https://www.khanacademy.org>

Helpful for graphing functions:

<https://www.education.ti.com/en/resources/family-of-functions>

Name _____

Period _____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Simplify.

1) $\frac{5^2 + (14 - 6)^2}{16 \div 4 - (2 + 1)}$

1) _____

Evaluate the expression for the given replacement values.

2) $\frac{y - 6x}{8x - xz}$ when $x = -1$, $y = 3$, and $z = -3$

2) _____

Write the statement using mathematical symbols.

3) The square of the difference of fifteen and x , divided by six, is greater than -20 .

3) _____

Simplify the expression.

4) $-3a - 2 - 12(a - 6)$

4) _____

Solve the equation.

5) $9(x + 3) = 5[13 - 2(3 - x) + 7]$

5) _____

6) $\frac{z + 6}{9} + 1 = \frac{2z + 3}{6}$

6) _____

Solve the equation for the specified variable.

7) $5x - 7y = 2$ for y

7) _____

8) $C = \frac{5}{9}(F - 32)$ for F

8) _____

Solve the inequality. Write your solution in interval notation.

9) $-4 < 2(x - 1) \leq 3$

9) _____

10) $-5 \leq \frac{2x - 3}{2} < 6$

10) _____

Solve.

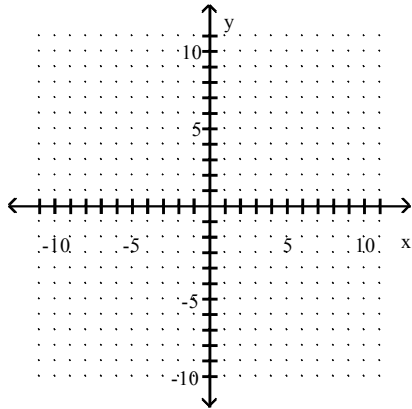
11) Find 11% of 50.

11) _____

Graph the line.

12) $5x - 3y = 15$

12) _____



Solve.

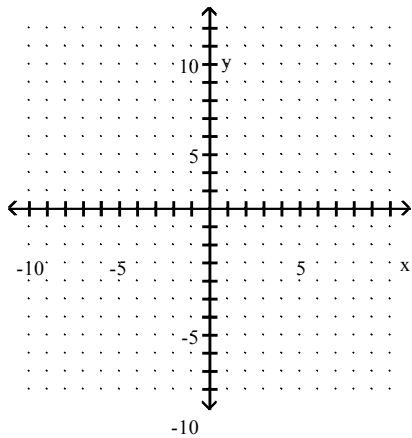
13) Find the slope of the line that passes through (3, 7) and (-9, 2).

13) _____

Graph the nonlinear function. Suggested x-values have been given for ordered pair solutions.

14) $f(x) = -|x| + 4$ Let $x = -3, -2, -1, 0, 1, 2, 3$

14) _____



Find an equation of the line satisfying the given conditions. Write the equation using function notation.

15) Parallel to $2x - 5y = -9$; through (10, 6)

15) _____

16) Through (4, -3); perpendicular to $x + 4y = -4$

16) _____

Solve the system.

17)
$$\begin{cases} 4x + y = 12 \\ 16x + 4y = 48 \end{cases}$$

17) _____

18)
$$\begin{cases} y + 4z = 10 \\ 3x + y + 4z = -2 \\ -4x + 2z = 22 \end{cases}$$

18) _____

Simplify. Use positive exponents to write the answer.

19) $\frac{4-8x-1y^3}{4-5x-4y^6}$ 19) _____

Perform the indicated operations.

20) $(3x + 12)(5x - 5)$ 20) _____

Factor the polynomial completely.

21) $x^2 - 2x - 99$ 21) _____

Write the rational expression in lowest terms.

22) $\frac{4x - 20}{15 - 3x}$ 22) _____

Solve the equation for x.

23) $\frac{x}{x-7} = 4 - \frac{7}{x-7}$ 23) _____

24) $\frac{x^2 + 4}{x} + 5 = \frac{4(x + 1)}{x}$ 24) _____

Raise to the power or find the root. Assume that all variables represent positive numbers. Write with only positive exponents.

25) $\sqrt[3]{25}$ 25) _____

Perform the indicated operation and simplify. Write the result in the form $a + bi$.

26) $(3 - 4i) - (3 - i)$ 26) _____

Solve the equation by completing the square.

27) $x^2 + 10x = -10$ 27) _____

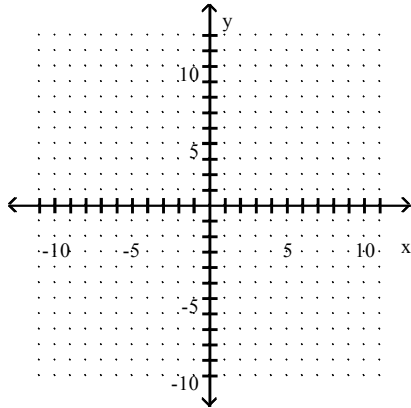
Solve the inequality. Write the solution set in interval notation.

28) $x^2 + 7x \geq -12$ 28) _____

Graph the function. Find the vertex, y-intercept, and x-intercepts (if any).

29) $h(x) = x^2 - 8x + 16$

29) _____



For the given functions f and g, find the requested function.

30) If $f(x) = 3x + 8$ and $g(x) = 2x - 1$, find $(f \circ g)(x)$.

30) _____

Use the properties of logarithms to write the expression as a single logarithm.

31) $\log_4 11 + \log_4 11$

31) _____

Provide an appropriate response.

32) Solve $6^x - 3 = \frac{1}{36}$ for x. Give an exact solution.

32) _____

Solve the logarithmic equation for x. Give an exact solution

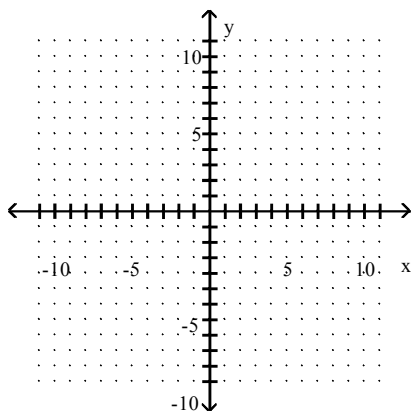
33) $\log_8(3x - 5) = 2$

33) _____

Sketch the graph of the equation. If the graph is a parabola, find its vertex. If the graph is a circle, find its center and radius.

34) $y = 2(x - 4)^2 + 5$

34) _____



Find the center and the radius of the circle.

35) $(x - 5)^2 + (y - 8)^2 = 16$

35) _____

36) $x^2 + (y - 3)^2 = 9$

36) _____

Solve the logarithmic equation for x. Give an exact solution

37) $\log_5 4 + \log_5 x = 1$

37) _____

Perform the indicated operation and simplify. Write the result in the form $a + bi$.

38) $(5 - 9i)^2$

38) _____

Raise to the power or find the root. Assume that all variables represent positive numbers. Write with only positive exponents.

39) $\left(\frac{1}{512}\right)^{-1/3}$

39) _____

40) $\left(\frac{8x^3}{125}\right)^{2/3}$

40) _____

41) $\sqrt[3]{-125a^{12}b^3}$

41) _____

Perform the indicated operation. If possible, simplify your answer.

42) $\frac{x^3 + 1}{x^3 - x^2 + x} \cdot \frac{6x}{-72x - 72}$

42) _____

43) $\frac{3}{x + 5} - \frac{3x}{5x + 25} + \frac{5}{2x + 10}$

43) _____

Simplify the complex fraction.

44) $\frac{\frac{5}{x} - \frac{3}{5x}}{\frac{5}{6x} - \frac{1}{x}}$

44) _____

Factor the polynomial completely.

45) $36x^2 - 49$

45) _____

Perform the indicated operations.

46) $(2x + 5y)(2x - 5y)$

46) _____

47) $(8x + 11y)^2$

47) _____

Simplify the expression.

48) $\frac{4}{a} - \frac{1}{1} - \frac{1}{a} - \frac{3}{1}$

48) _____

5 3 3 4

49) $-2a - 4 - 7(a - 5)$

49) _____

Solve the equation.

50) $11(x + 3) = 6[12 - 2(3 - x) + 9]$

50) _____

51) $\frac{9w}{4} + 5 = \frac{3w}{10} + 3$

51) _____

52) $|3x + 9| + 3 = 8$

52) _____

Solve the inequality. Write your solution in interval notation.

53) $\frac{5x - 2}{3} - \frac{7x + 6}{4} \geq 0$

53) _____

54) $x \geq 4$ and $x \geq 1$

54) _____

Solve.

55) A computer company sold 7,120,000 computers this year. This represents a 9.36% decrease over the number of new computers sold 3 years ago. Use this information to find the number of new computers sold 3 years ago. Round to the nearest thousand.

55) _____

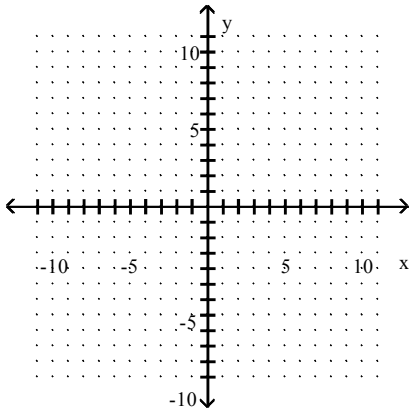
56) \$33 billion a year is spent on tourism in Florida, Louisiana, and Mississippi. Tourists spend \$2 billion more in Louisiana than they do in Mississippi. In Florida they spend \$1 billion less than twice the amount spent in Mississippi. Find the amount spent in each state.

56) _____

Graph the line.

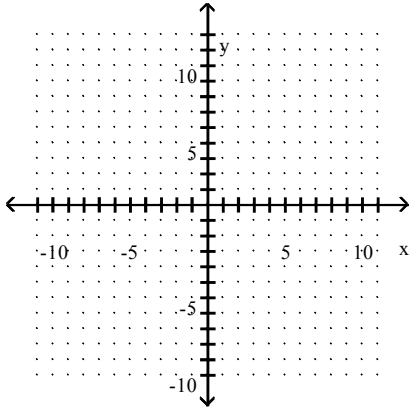
57) $5x - 4y = 20$

57) _____



58) $f(x) = \frac{1}{2}x - 3$

58) _____



Solve.

59) Find the slope of the line that passes through $(-1, 5)$ and $(9, 4)$.

59) _____

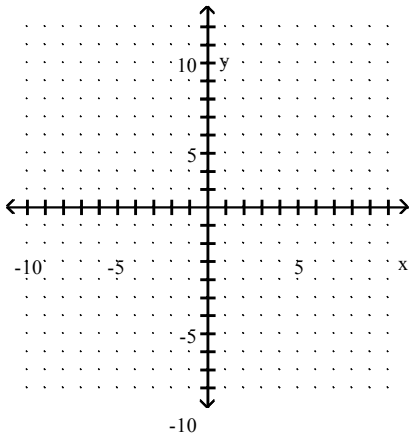
60) Find the slope and the y-intercept of the line $6x - 10y = 60$.

60) _____

Graph the nonlinear function. Suggested x-values have been given for ordered pair solutions.

61) $f(x) = -|x| + 5$ Let $x = -3, -2, -1, 0, 1, 2, 3$

61) _____



Find an equation of the line satisfying the given conditions. Write the equation in standard form.

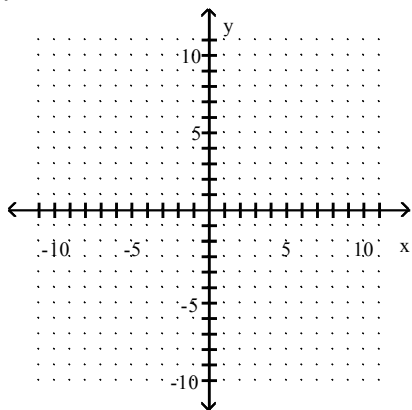
62) Perpendicular to $y = 2$; through $(7, -12)$

62) _____

Graph the inequality.

63) $y \geq 6$

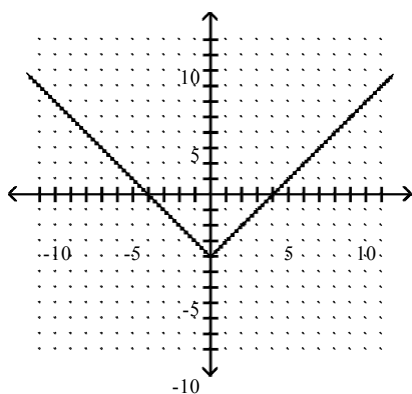
63) _____



Find the domain and range of the relation. Also determine whether the relation is a function.

64)

64) _____

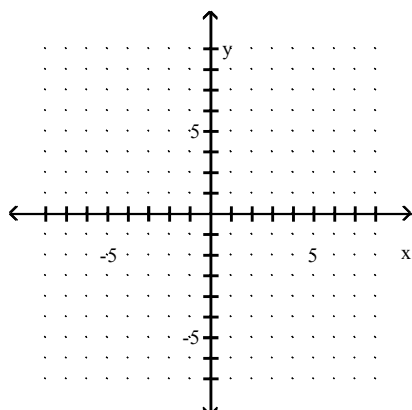


Graph the function. State the domain and range of the function.

65)

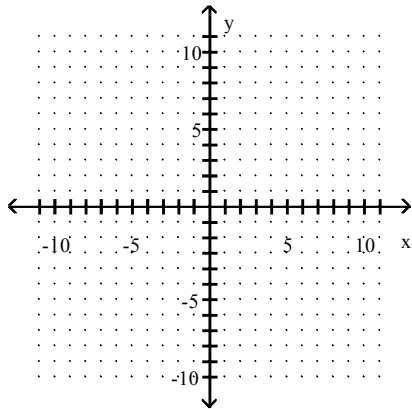
65) _____

$$f(x) = \begin{cases} 3x + 3 & \text{if } x \leq 0 \\ \frac{1}{4}x - 4 & \text{if } x > 0 \end{cases}$$



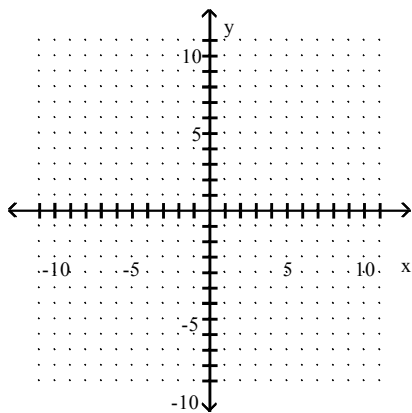
66) $f(x) = x^2 + 3$

66) _____



67) $f(x) = -|x + 3|$

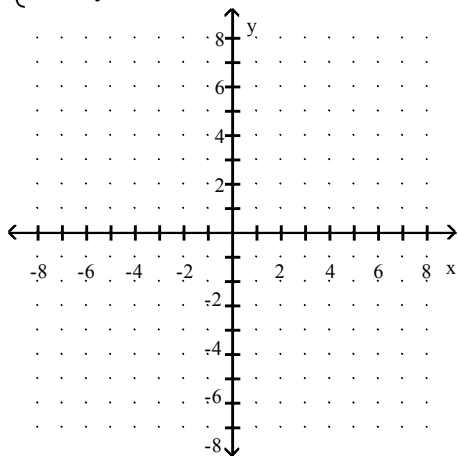
67) _____



Solve the system of equations by graphically and then solve by the elimination method or the substitution method.

68)
$$\begin{cases} x - 3y = 7 \\ 2x + 3y = -13 \end{cases}$$

68) _____



Solve the system.

69)
$$\begin{cases} 2x + 15y = -78 \\ 8x + 3y = 30 \end{cases}$$

69) _____

Simplify. Use positive exponents to write the answer.

$$70) \left(\frac{8x-4z^3}{2xz^{-3}} \right)^{-2} \quad 70) \underline{\hspace{2cm}}$$

Perform the indicated operations.

$$71) (10x^2 - xy - y^2) + (x^2 + 8xy + 11y^2) \quad 71) \underline{\hspace{2cm}}$$

Factor the polynomial completely.

$$72) 30x^3y + 42xy^5 \quad 72) \underline{\hspace{2cm}}$$

Write the rational expression in lowest terms.

$$73) \frac{4x - 20}{25 - 5x} \quad 73) \underline{\hspace{2cm}}$$

Perform the indicated operation. If possible, simplify your answer.

$$74) \frac{2-x}{x-4} - \frac{2x+3}{4-x} \quad 74) \underline{\hspace{2cm}}$$

$$75) \frac{3}{x+4} - \frac{4x}{5x+20} + \frac{8}{2x+8} \quad 75) \underline{\hspace{2cm}}$$

Simplify the complex fraction.

$$76) \frac{\frac{2}{x} - \frac{6}{7x}}{\frac{2}{7x} - \frac{1}{x}} \quad 76) \underline{\hspace{2cm}}$$

Divide.

$$77) (36x^3 - 31x) \div (6x - 1) \quad 77) \underline{\hspace{2cm}}$$

Solve the equation for x.

$$78) \frac{3x+5}{6x-8} = \frac{17}{8} \quad 78) \underline{\hspace{2cm}}$$

$$79) \frac{x}{x-5} = 6 - \frac{5}{x-5} \quad 79) \underline{\hspace{2cm}}$$

Raise to the power or find the root. Assume that all variables represent positive numbers. Write with only positive exponents.

$$80) \left(\frac{1}{9} \right)^{-1/2} \quad 80) \underline{\hspace{2cm}}$$

$$81) \left(\frac{42x^{1/5}y^7}{x^{1/5}} \right)^{1/2}$$

81) _____

Perform the indicated operations. Assume that all variables represent positive numbers.

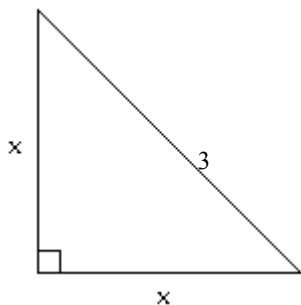
82) $\sqrt{63x^3} - 2\sqrt{112x^3}$

82) _____

Solve the problem.

83) Find x .

83) _____



Solve the equation.

84) $3x^2 - 4x = 7$

84) _____

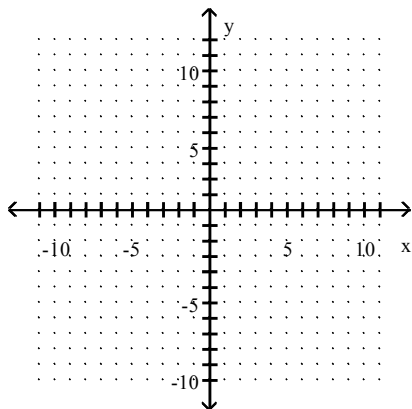
85) $u^2 + 12u + 17 = 0$

85) _____

Graph the function. Find the vertex.

86) $f(x) = -5x^2$

86) _____



Solve the logarithmic equation for x . Give an exact solution

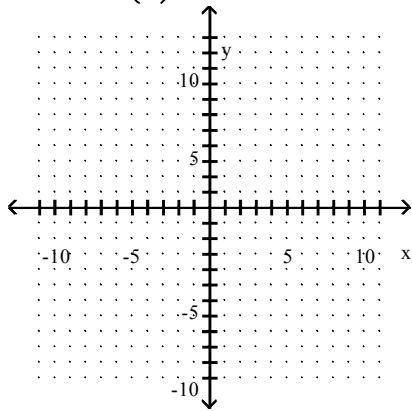
87) $\log_3 x = -2$

87) _____

Provide an appropriate response.

88) Graph $y = \left(\frac{1}{3}\right)^x + 2$.

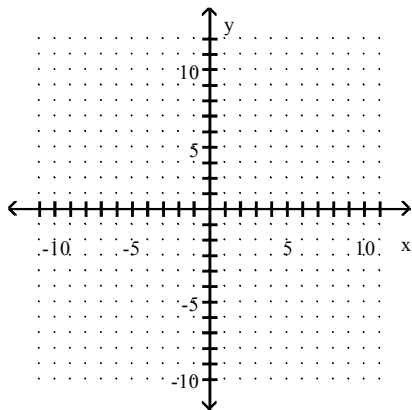
88) _____



Sketch the graph of the equation.

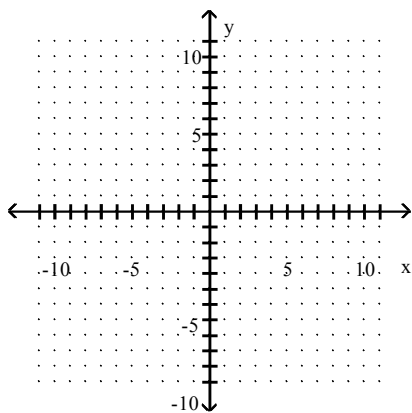
89) $x^2 + y^2 = 9$

89) _____



90) $y = x^2 + 2x - 1$

90) _____



Solve the logarithmic equation for x. Give an exact solution

91) $\log_8(3x - 14) = 2$

91) _____

Perform the indicated operations. Assume that all variables represent positive numbers.

$\sqrt{\quad} \quad \sqrt{\quad}$

$$92) (7 + 4)(3 + 4)$$

92) _____

Raise to the power or find the root. Assume that all variables represent positive numbers. Write with only positive exponents.

93) $\left(\frac{27x^3}{125}\right)^{2/3}$ 93) _____

94) $\sqrt[3]{-125a^6b^3}$ 94) _____

Factor the polynomial completely.

95) $x^2 - 2x - 8$ 95) _____

96) $121x^2 + 22x + 1$ 96) _____

Perform the indicated operations.

97) $4xy(2x - 5y)$ 97) _____

98) $(-3x + 6)(-3x + 12)$ 98) _____

99) $(6x + 7y)(6x - 7y)$ 99) _____

Find an equation of the line satisfying the given conditions. Write the equation in standard form.

100) Through $\left(0, \frac{41}{5}\right)$; slope $\frac{4}{5}$ 100) _____

Find an equation of the line satisfying the given conditions. Write the equation using function notation.

101) Through $(2, -1)$; perpendicular to $x - 4y = 4$ 101) _____

102) Parallel to $2x - 5y = -5$; through $(10, 6)$ 102) _____