

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

Graph.

1) $y = -\frac{3}{4}x$

2) $4x + y = 4$

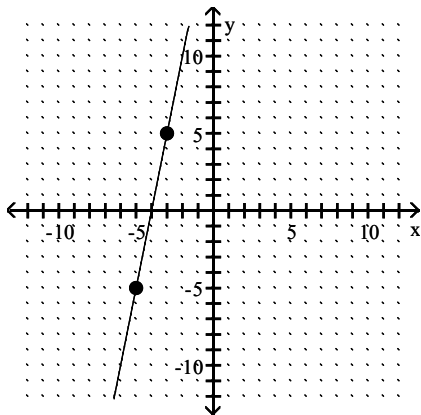
3) $3x + 4y = -20$

4) $y = -3$

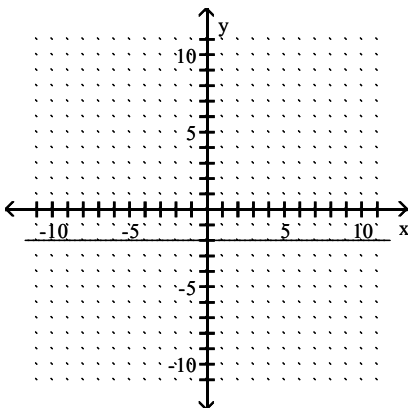
5) $x + 2 = 0$

Find the slope of the line.

6)



7)



8) Through $(-4, -7)$ and $(-6, 5)$

9) $6x + y = -10$

10) $x = 1$

Provide an appropriate response.

11) Determine the slope and the y-intercept of the graph of $11x - 5y = 55$.

12) Determine whether the graphs of $7x - y = -10$ and $y = \frac{1}{7}x + 15$ are parallel lines, perpendicular lines, or neither.

Find an equation for the line. Write the equation in standard form.

13) With slope of $-\frac{7}{9}$, through $(4, 5)$

14) Through the origin and $(6, -5)$

15) Through $(1, 3)$ and $(-6, 5)$

16) Through $(1, 6)$ and parallel to $x = -9$

17) With slope $-\frac{1}{6}$ and y-intercept $(0, 9)$

Find the indicated function values.

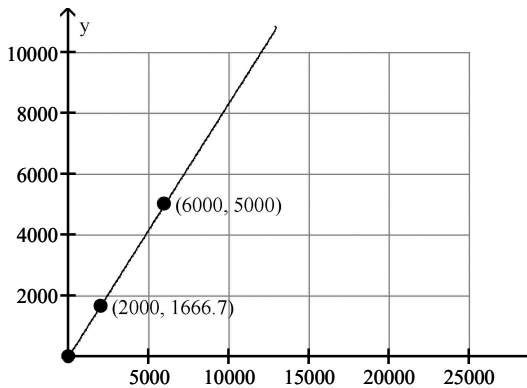
18) If $h(x) = x^3 - x$, find
 a. $h(-1)$ b. $h(0)$ c. $h(4)$

Provide an appropriate response.

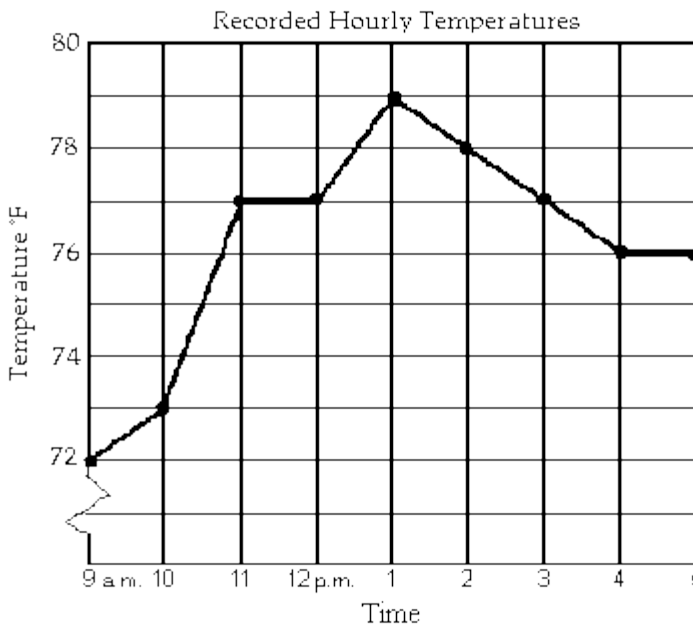
19) If $f(5) = 750$, write the corresponding ordered pair.

Solve.

- 20) The graph shows the total cost y (in dollars) of owning and operating a minivan where x is the number of miles driven. Find the slope of the line and write the slope as a rate of change.



The line graph shows the recorded hourly temperatures in degrees Fahrenheit at an airport. Use the graph to answer the question.



- 21) At what time was the temperature the lowest?
- 22) What temperature was recorded at 9 a.m.?
- 23) At what time was the temperature 72°?
- 24) At what time was the temperature 73°?

Answer true or false.

- 25) Although $(9, 4)$ is not a solution of $x + 2y = 2$, it can still be a solution of the system

$$\begin{cases} x + 2y = 2 \\ x + y = 9 \end{cases}$$

Is the ordered pair a solution of the linear system?

26) $\begin{cases} 3x - 4y = 18 \\ 5x + y = 1 \end{cases}$; $(2, -3)$

27) $\begin{cases} 4x - 4y = 24 \\ 5x + 4y = -11 \end{cases}$; $(3, -3)$

Solve the system by graphing.

28) $\begin{cases} x - y = 1 \\ 3x - y = -1 \end{cases}$

29) $\begin{cases} y = -5x \\ 5x + y = 9 \end{cases}$

Solve the system of equations by the substitution method.

30) $\begin{cases} 4x - 3y = -11 \\ y = x + 3 \end{cases}$

31) $\begin{cases} \frac{1}{2}x + 3y = -\frac{47}{4} \\ 8x = -y \end{cases}$

Solve the system of equations by the addition method.

32) $\begin{cases} x + y = 25 \\ x - y = 5 \end{cases}$

33) $\begin{cases} 6x - 9y = 15 \\ -2x + 3y = 1 \end{cases}$

Solve the system by the substitution or the addition method.

34) $\begin{cases} 3x + y = 12 \\ 4x + 3y = 11 \end{cases}$

35) $\begin{cases} 3(2x + y) = 3x + 27 \\ x - 2y = 0 \end{cases}$

36) $\begin{cases} 4x - 2y = 6 \\ y = 2x - 3 \end{cases}$

$$37) \begin{cases} x - \frac{19}{81}y = 2 \\ -3x + 2y = 8 \end{cases}$$

Solve the problem by writing and using a system of linear equations.

38) Two numbers have a sum of 129 and a difference of 37. Find the numbers.

39) A national wildlife refuge in Michigan has 106 thousand more trees than a national wildlife refuge in Ohio. The total number of trees for both is 336 thousand. Find the number of trees for each.

Graph the inequality.

40) $x - y \geq -2$

41) $y \geq 5x$

42) $2x + 3y > -6$

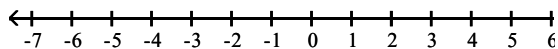
Graph the solution of the system of linear inequalities.

$$43) \begin{cases} 2x + y \leq 4 \\ y \leq 1 \end{cases}$$

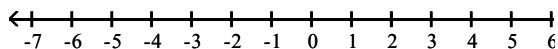
$$44) \begin{cases} x + 2y \leq 2 \\ x + y \geq 0 \end{cases}$$

Graph the set of numbers given in interval notation. Then write an inequality statement in x describing the numbers graphed.

45) $[1, \infty)$

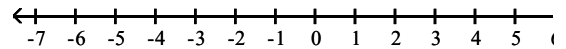


46) $(-\infty, -6)$



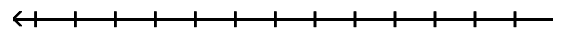
Graph the inequality on a number line. Then write the solution in interval notation.

47) $-5 \leq x < -1$



Solve the inequality. Graph the solution set and write it in interval notation.

48) $12 < 3x \leq 21$



49) $x + 1 < 7$



50) $6x - 11 > 5x - 10$



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

51) $\sqrt{169}$

Find the root. Use absolute value bars when necessary.

52) $\sqrt[2]{(7xz)^2}$

Rationalize the denominator. Assume that all variables represent positive numbers.

53) $\sqrt{\frac{25}{x}}$

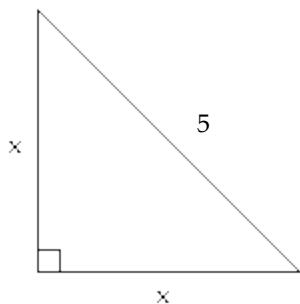
Perform the indicated operations. Assume that all variables represent positive numbers.

54) $\sqrt{24x^3} - 4\sqrt{96x^3}$

55) $\sqrt{5}(\sqrt{45} + \sqrt{15})$

Use a calculator to approximate the number to three decimal places.

56) $\sqrt{442}$

Solve the problem.57) Find x .58) Find the distance between the points $(2, -3)$ and $(5, 6)$.59) Find the distance between the points $(3\sqrt{6}, -3)$ and $(5\sqrt{6}, 2)$.**Simplify the rational expression.**

60) $\frac{2x - 10}{3x - 15}$

61) $\frac{2x + 2}{10x^2 + 16x + 6}$

62) $\frac{4m^3 - 4m^2 - 8m}{m^2 - 3m + 2}$

63) $\frac{b - a}{a^2 - b^2}$

Perform the indicated operation and simplify if possible.

64) $\frac{5}{x + 1} \cdot (3x + 3)$

65) $\frac{y^2 - 10y + 24}{2y + 12} \cdot \frac{y + 6}{3y - 12}$

66) $\frac{2x}{x - 6} - \frac{x + 2}{x - 6}$

67) $\frac{7a}{a^2 + 2a - 8} - \frac{2}{a + 4}$

68) $\frac{16}{x^2 - 1} + \frac{8}{x + 1}$

69) $\frac{x^2 - 25}{x^2 - 5x} \div \frac{x^2 + 4x + 1}{2x + 8}$

70) $\frac{x + 5}{x^2 + 11x + 28} + \frac{5x + 8}{x^2 + 5x - 14}$

Solve the equation by completing the square.

71) $x^2 + 14x = -39$

72) $4a^2 + 1 = 3a$

Use the quadratic formula to solve the equation.

73) $x^2 - 8x + 7 = 0$

74) $x^2 + 12x + 36 = 0$

75) $x^2 - 4x + 4 = 0$

76) $x^2 + 14x + 35 = 0$

Solve the equation.

77) $3x^2 - 4x = 7$

78) $(x + 6)^2 = 13$

79) $m^2 + m + 9 = 0$

80) $u^2 + 18u + 58 = 0$

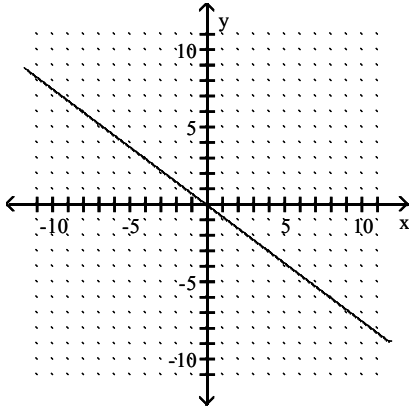
81) $5x^2 + 6x + 1 = 0$

82) $y^2 - 3y = 2$

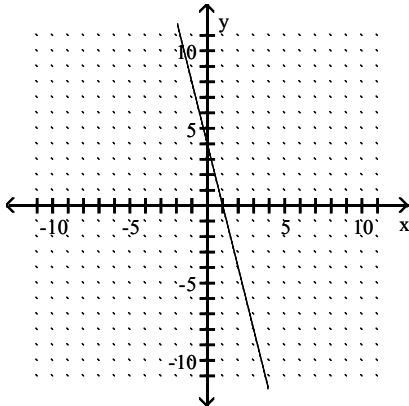
Answer Key

Testname: ALGEBRA 1 - 2ND SEM EXAM REVIEW1

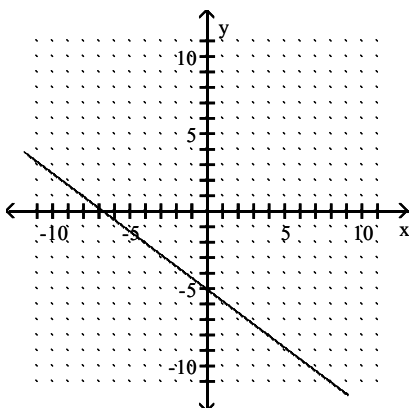
1)



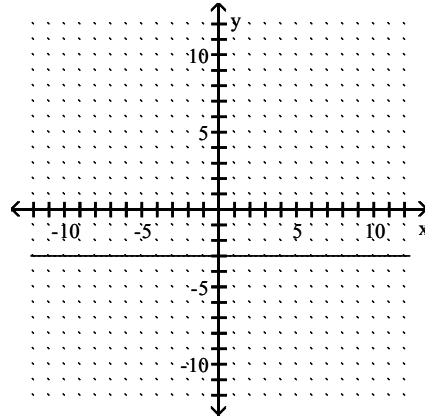
2)



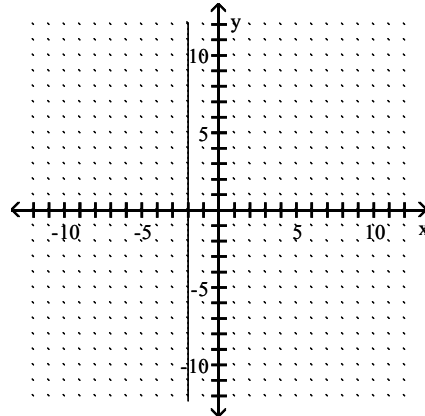
3)



4)



5)

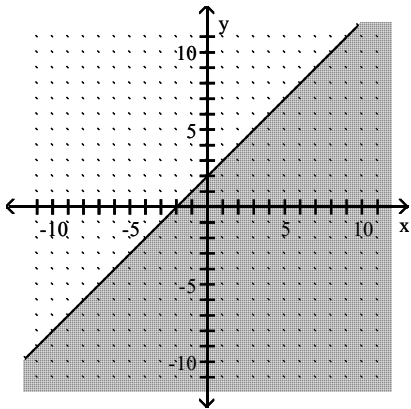


- 6) 5
- 7) 0
- 8) - 6
- 9) -6
- 10) undefined
- 11) $\frac{11}{5}; (0, -11)$
- 12) neither
- 13) $7x + 9y = 73$
- 14) $5x + 6y = 0$
- 15) $2x + 7y = 23$
- 16) $x = 1$
- 17) $x + 6y = 54$
- 18) a. 0
b. 0
c. 60
- 19) (5, 750)
- 20) \$0.83 per mile
- 21) 9 a.m.
- 22) 72 ° F
- 23) 9 a.m.
- 24) 10 a.m.
- 25) False

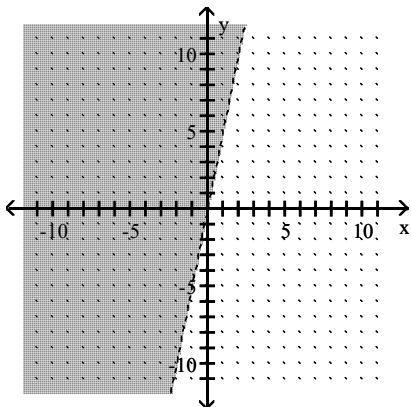
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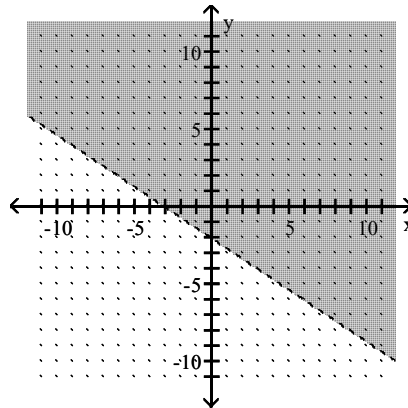
- 26) No
- 27) No
- 28) (-1, -2)
- 29) no solution
- 30) (-2, 1)
- 31) $\left(\frac{1}{2}, -4\right)$
- 32) (15, 10)
- 33) No solution
- 34) (5, -3)
- 35) (6, 3)
- 36) infinite number of solutions
- 37) $\left(\frac{68}{15}, \frac{54}{5}\right)$
- 38) 83, 46
- 39) Ohio: 115 thousand trees
Michigan: 221 thousand trees
- 40)



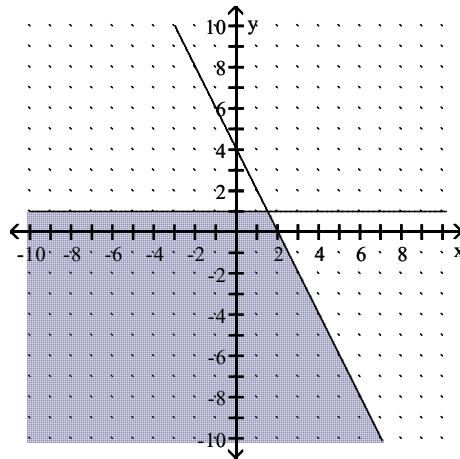
41)



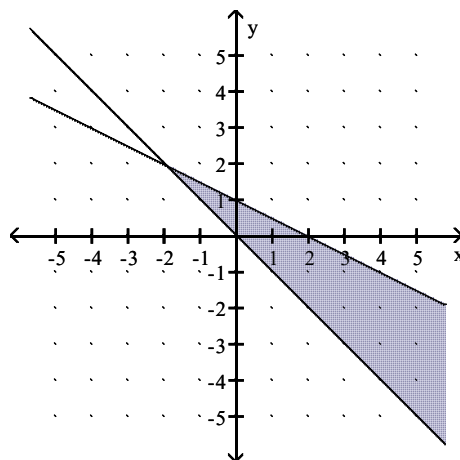
42)



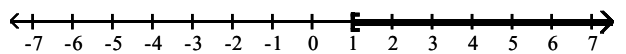
43)



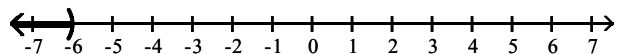
44)



45) $x \geq 1$



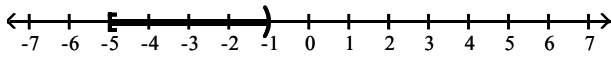
46) $x < -6$



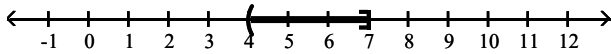
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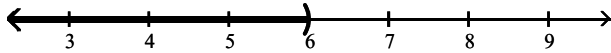
47) $[-5, -1)$



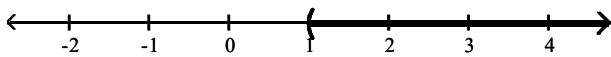
48) $(4, 7]$



49) $(-\infty, 6)$



50) $(1, \infty)$



51) 13

52) $7|xz|$

53) $\frac{5\sqrt{x}}{x}$

54) $-14x\sqrt{6x}$

55) $15 + 5\sqrt{3}$

56) 21.024

57) $\frac{5\sqrt{2}}{2}$

58) $3\sqrt{10}$ units

59) 7 units

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

61) $\frac{1}{5x + 3}$

62) $\frac{4m(m + 1)}{(m - 1)}$

63) $-\frac{1}{a + b}$

64) 15

65) $\frac{y - 6}{6}$

66) $\frac{x - 2}{x - 6}$

67) $\frac{5a + 4}{(a - 2)(a + 4)}$

68) $\frac{8}{x - 1}$

69) $\frac{2(x + 5)(x + 4)}{x(x^2 + 4x + 1)}$

70) $\frac{6x^2 + 31x + 22}{(x + 7)(x + 4)(x - 2)}$

71) $-7 - \sqrt{10}, -7 + \sqrt{10}$

72) $\frac{3 - i\sqrt{7}}{8}, \frac{3 + i\sqrt{7}}{8}$

73) 7, 1

74) -6

75) 2

76) $-7 - \sqrt{14}, -7 + \sqrt{14}$

77) $\frac{7}{3}, -1$

78) $-6 - \sqrt{13}, -6 + \sqrt{13}$

79) $\frac{-1 - i\sqrt{35}}{2}, \frac{-1 + i\sqrt{35}}{2}$

80) $-9 - \sqrt{23}, -9 + \sqrt{23}$

81) $-\frac{1}{5}, -1$

82) $\frac{3 + \sqrt{17}}{2}, \frac{3 - \sqrt{17}}{2}$