

Semester 1 Review

Solve each equation.

1) $-13k = 0$

2) $14 + n = 21$

3) $-2 = a - 18$

4) $4 = \frac{x}{3}$

5) $25 = 7 + v$

6) $\frac{a}{10} = -8$

7) $6 = -4r + 3r$

8) $-6(3x - 6) = 144$

9) $24 = -7(x - 4) - 4(1 - 7x)$

10) $3n - 7n = 6(2n + 8) - 4(5n + 1)$

$$11) -8n - 4 = 8(-2n - 4) + 4$$

$$12) -\frac{49}{24} = k + \frac{7}{3} - \frac{11}{4}k$$

$$13) \frac{3}{4}v - \frac{7}{4} + 1\frac{1}{4} = -1$$

$$14) |b| = 8$$

$$15) |5b| = 20$$

$$16) |7 - 9n| = 43$$

$$17) 5|x| = 20$$

$$18) 2|n| + 10 = 18$$

Solve each proportion.

$$19) \frac{k}{2} = \frac{8}{4}$$

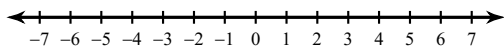
$$20) \frac{10}{k+9} = \frac{3}{10}$$

$$21) \frac{8}{r+6} = \frac{7}{r}$$

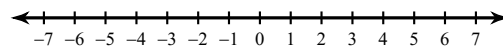
$$22) \frac{k-4}{k} = \frac{9}{6}$$

Draw a graph for each inequality.

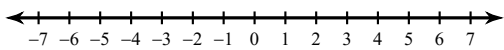
$$23) 5 \geq x$$



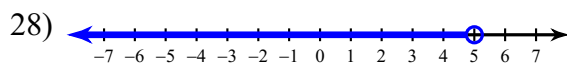
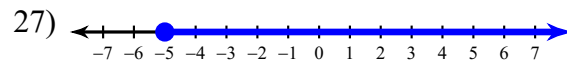
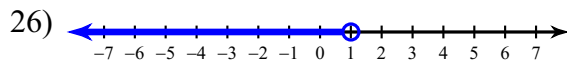
$$24) n < 1$$



$$25) 1 \leq k$$

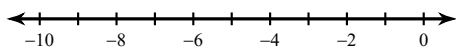


Write an inequality for each graph.

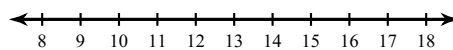


Solve each inequality and graph its solution.

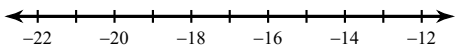
$$29) -7 \geq x + 1$$



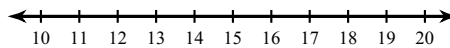
$$30) v + 13 > 29$$



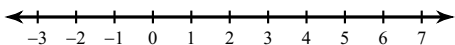
$$31) -19 \geq -1 + x$$



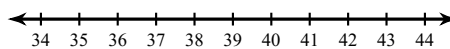
$$32) 4x \leq 64$$



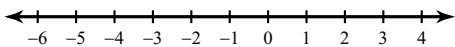
$$33) 15k \leq 0$$



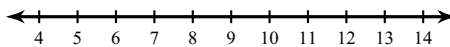
$$34) \frac{v}{6} < 6$$



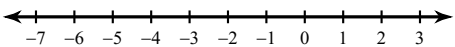
$$35) 0 \geq 8a + 7a$$



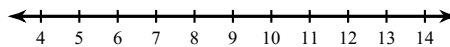
$$36) -6(-6r + 8) \geq 168$$



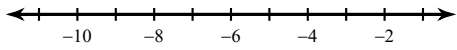
$$37) -8(1 - 6n) + 8(-8 - n) > -72$$



$$38) 4 - 6x \geq -5x - 2$$

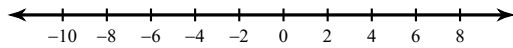


39) $8(3m + 5) + 2 \geq 5m - 15$

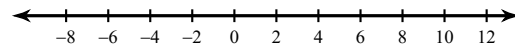


Solve each compound inequality and graph its solution.

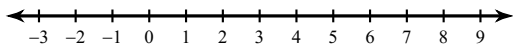
40) $\frac{a}{2} < -3$ or $a + 1 > 7$



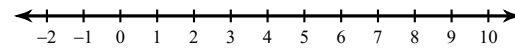
41) $-77 \leq 3 + 10n \leq 103$



42) $-x + 1 \leq 2$ and $4x + 10 < 34$

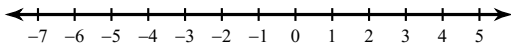


43) $x - 1 > 4$ or $5 + 10x \leq 35$

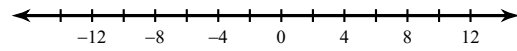


Solve each inequality and graph its solution.

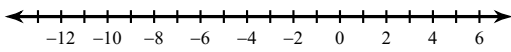
44) $|r| \leq 2$



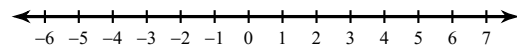
45) $|k| \geq 10$



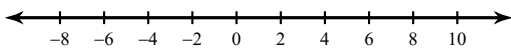
46) $|p + 4| < 7$



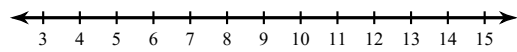
47) $|7x - 10| > 17$



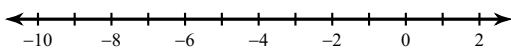
48) $\frac{|k|}{2} < 4$



49) $\frac{|-9 + p|}{3} < 1$

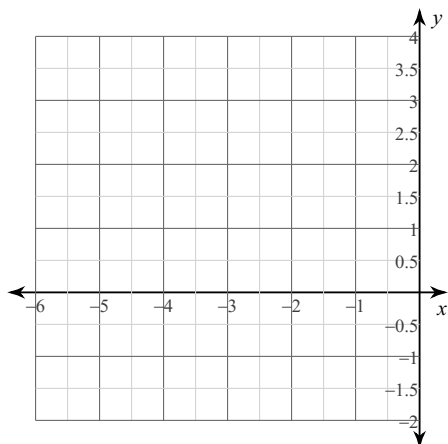


50) $5 + 5|x + 4| < 25$

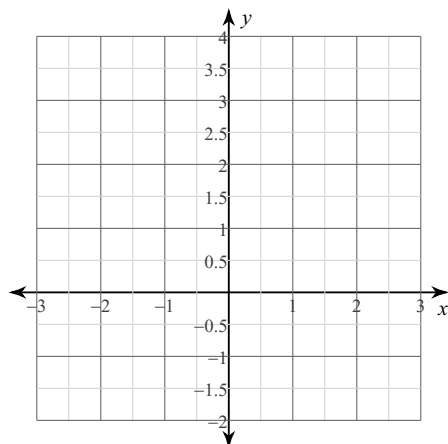


Sketch the graph of each function.

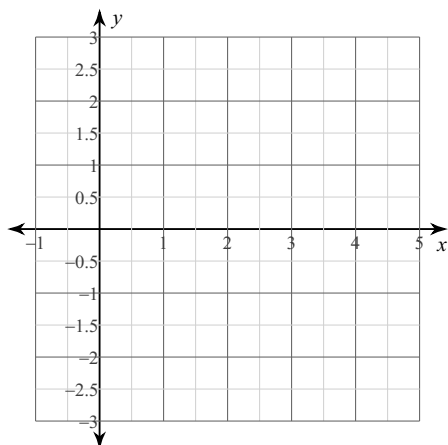
51) $y = x^2 + 6x + 8$



52) $y = x^2 + 2x$

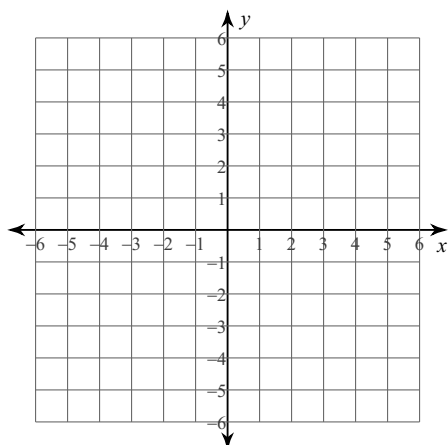


53) $y = x^2 - 4x + 2$

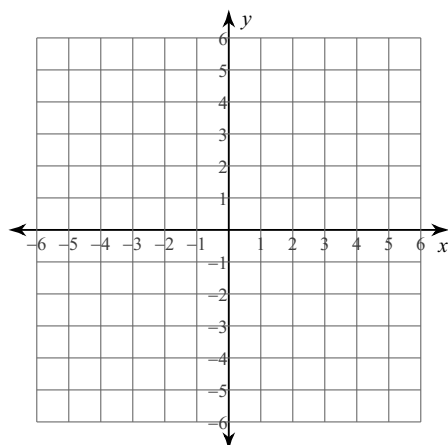


Graph each equation.

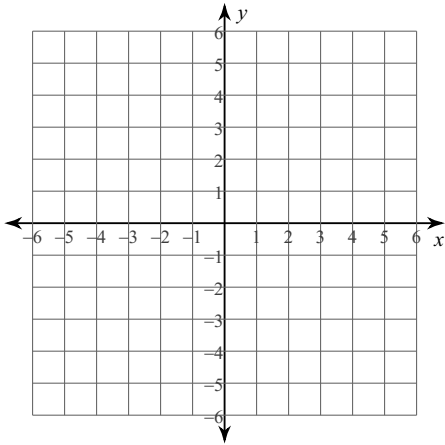
54) $y = |x + 2| - 4$



55) $y = |x + 3| - 4$

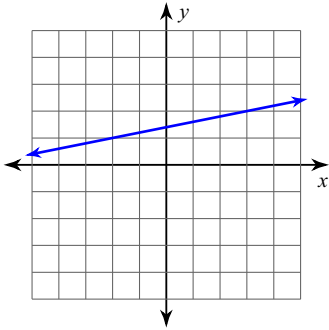


56) $y = |x - 3| - 4$

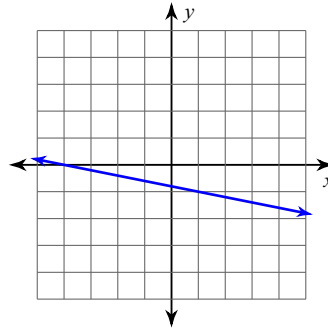


Find the slope of each line.

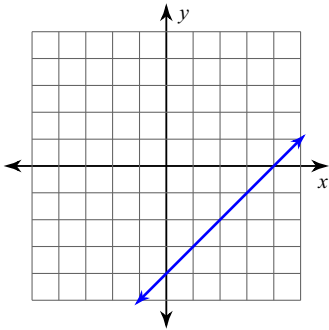
57)



58)



59)



Find the slope of the line through each pair of points.

60) $(2, -5), (-15, -3)$

61) $(10, -2), (-13, -14)$

62) $(-16, -14), (2, -7)$

Find the slope of each line.

63) $y = -8x - 5$

64) $y = -\frac{2}{3}x - 1$

65) $y = -\frac{9}{2}x - 5$

66) $y - 3 = 0$

67) $6 + 2y - 4x = 0$

68) $0 = -2y - 8 - 7x$

Find the slope of a line parallel to each given line.

69) $y = -1$

70) $y = 3x - 5$

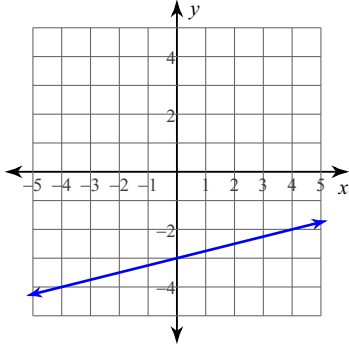
Find the slope of a line perpendicular to each given line.

71) $y = 4$

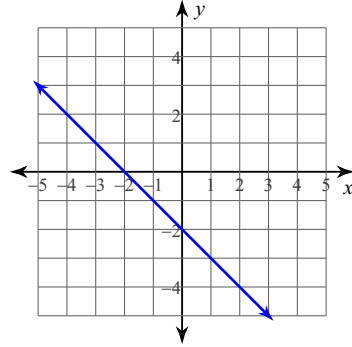
72) $y = -\frac{3}{4}x + 2$

Write the slope-intercept form of the equation of each line.

73)



74)



Write the slope-intercept form of the equation of each line given the slope and y-intercept.

75) Slope = 2, y-intercept = 1

76) Slope = -2, y-intercept = -5

Write the slope-intercept form of the equation of the line through the given point with the given slope.

77) through: $(-2, 2)$, slope = -3

78) through: $(2, -3)$, slope = -3

Write the slope-intercept form of the equation of the line through the given points.

79) through: $(0, -5)$ and $(-3, -3)$

80) through: $(5, 4)$ and $(2, -2)$

Write the slope-intercept form of the equation of the line described.

81) through: $(-5, -3)$, parallel to $y = \frac{7}{2}x - 5$

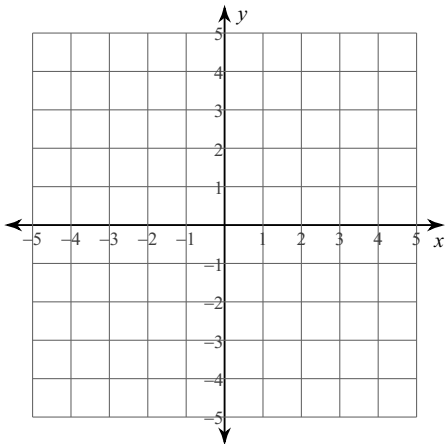
82) through: $(-1, 5)$, parallel to $y = -5x + 4$

83) through: $(-4, -1)$, perp. to $y = -\frac{2}{3}x + 2$

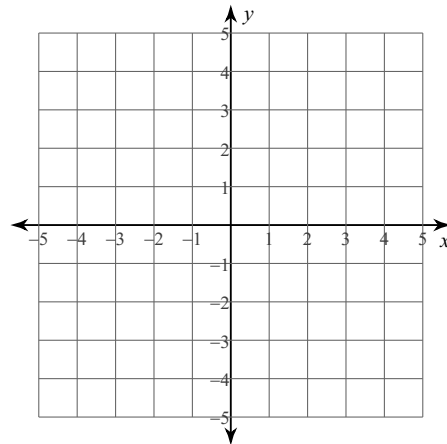
84) through: $(1, -1)$, perp. to $y = -3$

Solve each system by graphing.

85) $16 = -3x + 4y$
 $-16 - 8y - 6x = 0$

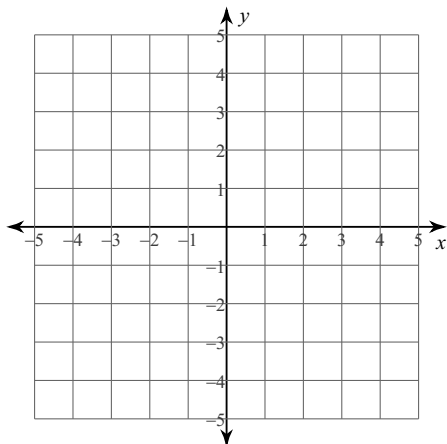


86) $6 - 7x = -2y$
 $0 = 2y - x - 6$



$$87) 2 = -x + y$$

$$y + \frac{1}{2}x = -4$$



Solve each system by substitution.

$$88) 4x - 6y = 6$$

$$y = 3x - 8$$

$$89) 4x + 3y = -10$$

$$y = x - 8$$

$$90) 3x + y = -3$$

$$-4x - y = 3$$

$$91) -2x + 3y = 22$$

$$-x - 3y = -16$$

Solve each system by elimination.

$$\begin{aligned} 92) \quad & 2x - 3y = -19 \\ & -8x + 3y = 13 \end{aligned}$$

$$\begin{aligned} 93) \quad & 14x - 3y = 10 \\ & 7x + y = -15 \end{aligned}$$

$$\begin{aligned} 94) \quad & 14x - 49y = -6 \\ & -4x + 14y = 0 \end{aligned}$$

95) The sum of two numbers is 25. Their difference is 3. Find the numbers.

96) Going down the river a boat went 22 km/h. Going up the river it only went 2 km/h. What is the speed of the current? How fast would the boat go if there were no current?

97) Amy and Krystal are selling fruit for a school fundraiser. Customers can buy small boxes of tangerines and large boxes of tangerines. Amy sold 10 small boxes of tangerines and 6 large boxes of tangerines for a total of \$200. Krystal sold 10 small boxes of tangerines and 3 large boxes of tangerines for a total of \$140. What is the cost each of one small box of tangerines and one large box of tangerines?

98) Brenda and Bill each improved their yards by planting rose bushes and geraniums. They bought their supplies from the same store. Brenda spent \$85 on 8 rose bushes and 5 geraniums. Bill spent \$50 on 1 rose bush and 5 geraniums. What is the cost of one rose bush and the cost of one geranium?

- 99) Jessica's school is selling tickets to the annual dance competition. On the first day of ticket sales the school sold 11 senior citizen tickets and 3 student tickets for a total of \$90. The school took in \$138 on the second day by selling 7 senior citizen tickets and 12 student tickets. Find the price of a senior citizen ticket and the price of a student ticket.
- 100) The water park is a popular field trip destination. This year the senior class at High School A and the senior class at High School B both planned trips there. The senior class at High School A rented and filled 9 vans and 2 buses with 192 students. High School B rented and filled 11 vans and 11 buses with 671 students. Every van had the same number of students in it as did the buses. How many students can a van carry? How many students can a bus carry?
- 101) A boat traveled 207 miles downstream and back. The trip downstream took 9 hours. The trip back took 23 hours. Find the speed of the boat in still water and the speed of the current.

102) The sum of the digits of a certain two-digit number is 8. Reversing its digits increases the number by 36. Find the number.

Simplify. Your answer should contain only positive exponents.

103) $2xy^{-4} \cdot 3x^{-4}y^{-1}$

104) $2a^3 \cdot a^4b^2 \cdot 2a^3b^2$

105) $3x^3y^3 \cdot 4x^{-1}y^0$

106) $(3x^4y^4)^{-1}$

107) $(2m^2n^3)^3$

108) $(4a^3b^{-3})^4$

109) $\frac{4x^3y^3}{xy^2}$

110) $\frac{4x^0}{2xy^{-1}}$

111) $\frac{a^3b^{-4}}{2ab^{-1}}$

112) $\left(\frac{2y^{-2} \cdot x^3y^0z^0}{x^0y^{-3}z^2}\right)^{-1}$

113) $\left(\frac{x^0y^0z^2 \cdot 2x^{-3}z^2}{2x^3y^2z^4}\right)^2$

114) $\left(\frac{2p^{-4}q^{-3}r^3}{(p^{-4}q^{-2} \cdot (pr^3)^0)^0}\right)^{-3}$

Name each polynomial by degree and number of terms.

115) $1 + 8m^6 + 6m^3$

116) $-10x^3$

117) $n^6 - 7n^2 + 2n^5 + 3n$

Simplify each expression.

118) $(2a^3 - 3a) + (4a + a^3)$

119) $(2n^4 + 4n^3) + (5n^3 + 4n^4)$

120) $(2n^3 - 3n^2) - (n^3 + n^2)$

121) $(4b^3 - 14 - 4b) - (4b + 12 + 7b^5)$

122) $(-10x^4 - 7 + 9x^5) + (7x^2 + 11x^5 + 13x^4)$

123) $(14x^3 + 1 - 9x^4) - (3x^2 - 13x^4 - x^3)$

124) $(-x^4 - 10x^2y^2) - (7x^2y^2 + 10x^4 - 8x^4y) - (10x^2y^2 - 13x^4)$

125) $(-3x^3y^2 + 12xy) + (-7x^3y^2 + 8x^4 - 12xy) - (5xy + 14x^4)$

126) $(-13xy^3 - 4x^3y^3) - (-14y^2 - 7x^3y^3 - 5xy^3) - (-10xy^3 - 13y^2)$

Find each product.

127) $6x(x - 4)$

128) $6x^2(7x^2 - 5x - 8)$

$$129) (5v + 5)(2v + 4)$$

$$130) (5r + 3)(5r + 5)$$

$$131) (4v - 1)(5v^2 - 7v + 1)$$

$$132) (5k^2 + k - 1)(3k + 2)$$

$$133) (4m^2 + 5m - 1)(4m^2 + 8m + 5)$$

$$134) (v - 4)(v + 4)$$

$$135) (b - 1)(b + 1)$$

$$136) (k - 2)(k + 2)$$

$$137) (2a + 2)^2$$

$$138) (7v^2 - 3)^2$$

$$139) (3n^2 - 8)(3n^2 + 8)$$

$$140) (3m - 2n^2)(3m + 2n^2)$$

$$141) (-3u - 3v^2)^2$$

$$142) (a - 6b)^2$$