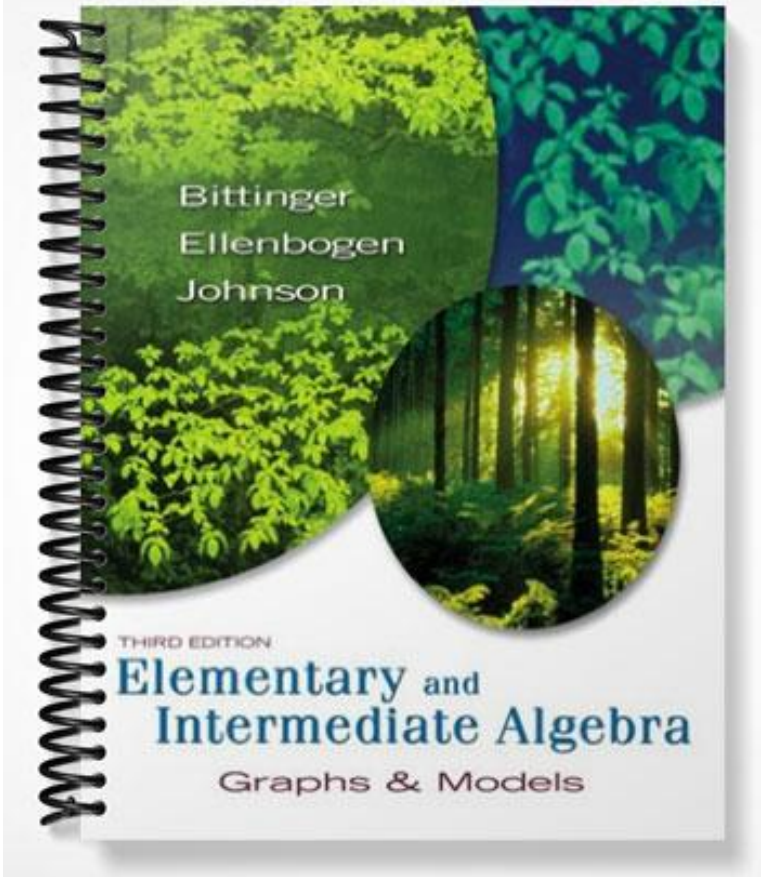
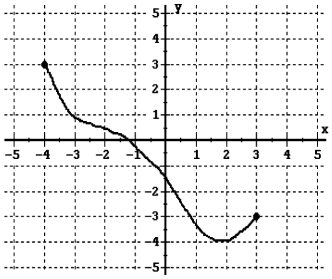
TEST BANK


Bittinger
Ellenbogen
Johnson
THIRD EDITION
Elementary and
Intermediate Algebra
Graphs & Models

1. For the following graph of f, determine

(a) $f(-3)$;
(b) the domain of f;
(c) any x-value for which $f(x) = 3$; and
(d) the range of f.



1. (a) _____

(b) _____

(c) _____

(d) _____

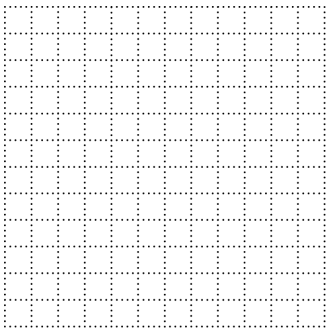
2. The function $S(t) = 1.3t + 6.6$ can be used to estimate the total U.S. sales of cellular phones, in billions of dollars, t years after 1998.

(a) Predict the total U.S. sales of cellular phones in 2009.
(b) What do the numbers 1.3 and 6.6 signify?

2. (a) _____

(b) _____

3. There were 18.5 thousand students enrolled at Eastern University in 2001 and 20.3 thousand students enrolled in 2005. Draw a graph and estimate the number of students enrolled at Eastern University in 2002.



3. _____

Find the slope and *y*-intercept.

4. $f(x) = \frac{3}{2}x + 4$ **4.** _____

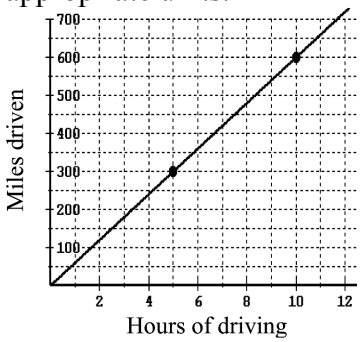
5. $5y + 3x = 6$ **5.** _____

Find the slope of the line containing the following points. If the slope is undefined, state so.

6. $(-2, 3)$ and $(3, 6)$ **6.** _____

7. $(7.1, -6.2)$ and $(3.5, -6.2)$ **7.** _____

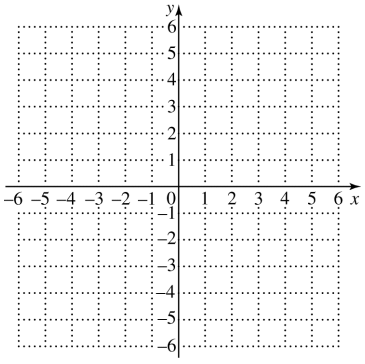
8. Find the rate of change for the graph below. Use appropriate units. **8.** _____



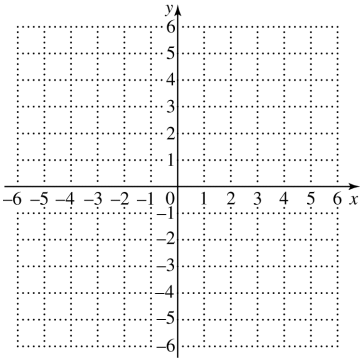
9. Find a linear function whose graph has slope -4 and *y*-intercept $(0, -5)$. **9.** _____

Graph by hand.

10. $f(x) = 2x - 3$

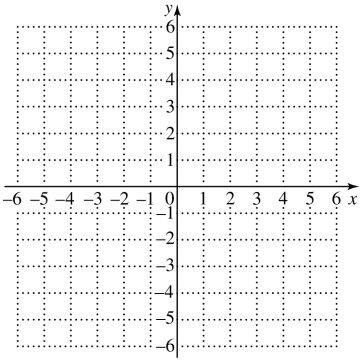


11. $4x + 2y = 7$

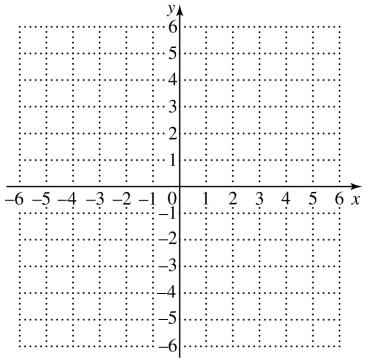


Graph by hand.

12. $y - 2 = -\frac{3}{2}(x + 4)$



13. $7 - x = 5$



14. Determine whether the standard viewing window shows the x- and y-intercepts of the graph of $f(x) = 3x + 8$.

14. _____

Determine without graphing whether each pair of lines is parallel, perpendicular, or neither.

15. $5y + 3 = 2x$,
$-5x + 2y = 4$

15. _____

16. $y = 7 - 2x$,
$5y - x = 2$

16. _____

17. Which of these are linear equations?

17. _____

(a) $6x - 7 = 0$ (b) $9x + 2y = 3$ (c) $2a^2 + 3b = 5$

18. Find an equation in point-slope form of the line with slope 3 and containing (–2, 8).

18. _____

19. Use function notation to write an equation for the line containing (5, –2) and (1, –6).

19. _____

20. Suppose that 2.7 million ink pens are sold when the price is \$2 per pen and 1.5 million pens are sold at \$4 per pen.

(a) Find a linear function that expresses the number of ink pens sold as a function of the price per pen.

(b) Use the function of part (a) to predict the consumer demand should the price drop to \$1.50 per pen.

20. (a) _____

(b) _____

21. The table at the right shows the sales of softcover books in the U.S. in several recent years.

(a) Use linear regression to find a linear function that can be used to predict the sales of softcover books x years after 1993.

(b) Predict the sales of softcover books in 2010.

Year	*Sales* (*in millions*)
1993	1250
1995	1467
1998	1507
1999	1576
2000	1567

21. (a) _____

(b) _____

22. Find the domain of $g(x) = \dfrac{x-2}{4x+1}$.

22. _____

23. Find the following, given that $g(x) = -2x - 3$ and $h(x) = x^2 + 1$.

(a) $h(-3)$
(b) $g(0)$
(c) $g(t) + 2$
(d) $(g \cdot h)(4)$
(e) Any zeros of $g(x)$
(f) The domain of h/g

23. (a) _____

(b) _____

(c) _____

(d) _____

(e) _____

(f) _____

Find an equation of the line.

24. Containing (3, –5) and parallel to the line $3x - 2y = 4$

24. _____

25. Containing (3, –5) and perpendicular to the line $3x - 2y = 4$

25. _____

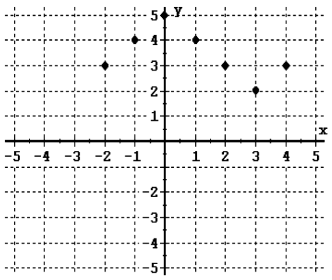
INTERMEDIATE ALGEBRA

Name: _____

Chapter 2, Form B

1. For the following graph of f, determine

(a) $f(2)$;
(b) the domain of f;
(c) any x-value for which $f(x) = 3$; and
(d) the range of f.



1. (a) _____

(b) _____

(c) _____

(d) _____

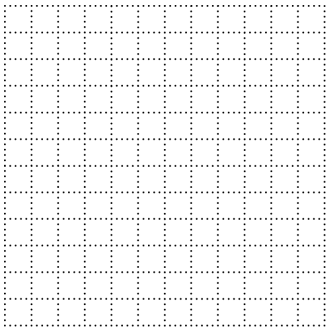
2. The function $S(t) = -0.3t + 1.7$ can be used to estimate the total U.S. sales of projection TVs, in billions of dollars, t years after 1998.

(a) Predict the total U.S. sales of projection TVs in 2003.
(b) What do the numbers -0.3 and 1.7 signify?

2. (a) _____

(b) _____

3. There were 17.3 thousand students enrolled at Western University in 2001 and 19.1 thousand students enrolled in 2005. Draw a graph and estimate the number of students enrolled at Western University in 2003.



3. _____

Find the slope and *y*-intercept.

4. $f(x) = \frac{2}{5}x - 7$ **4.** _____

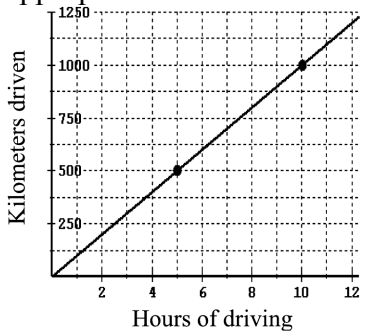
5. $-3y + 4x = 3$ **5.** _____

Find the slope of the line containing the following points. If the slope is undefined, state so.

6. (2, 1) and (3, –5) **6.** _____

7. (–2.5, –3.4) and (–2.5, 4.8) **7.** _____

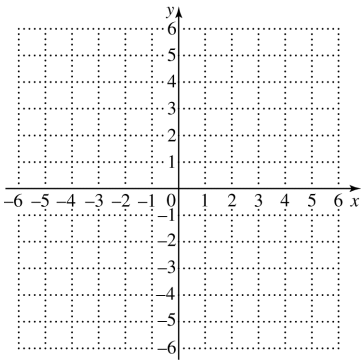
8. Find the rate of change for the graph below. Use appropriate units. **8.** _____



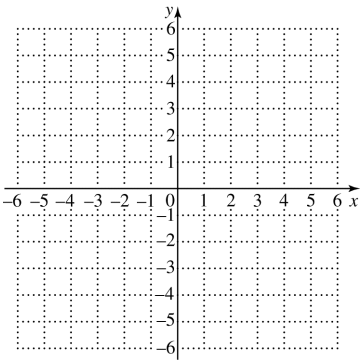
9. Find a linear function whose graph has slope 6 and *y*-intercept (0, –2). **9.** _____

Graph by hand.

10. $6y + 12 = 0$

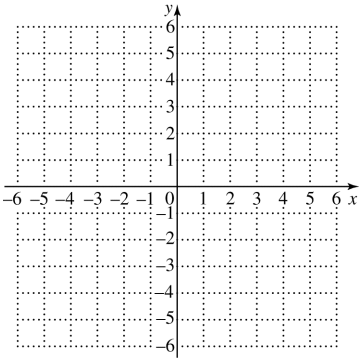


11. $3x + 2y = 0$

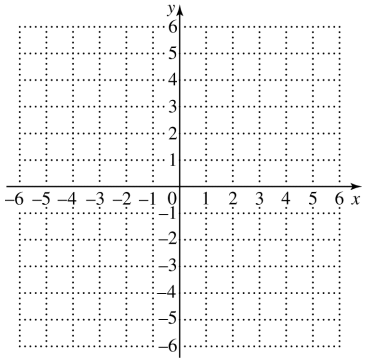


Graph by hand.

12. $y-5=-\frac{1}{4}(x+2)$



13. $6-x=2$



14. Determine whether the standard viewing window shows the x- and y-intercepts of the graph of $f(x)=3x-14$.

14. _____

Determine without graphing whether each pair of lines is parallel, perpendicular, or neither.

15. $x=6-5y,$
$5x+y=2$

15. _____

16. $4y+3=7x,$
$-7x+4y=8$

16. _____

17. Which of these are linear equations?

(a) $2x-7y=3$ (b) $y-4=0$ (c) $4b-3b^2=1$

17. _____

18. Find an equation in point-slope form of the line with slope –4 and containing (4, –5).

18. _____

19. Use function notation to write an equation for the line containing (–8, 2) and (3, –6).

19. _____

20. In 1995, Talk Right Communications charged \$60 a month for unlimited cellular phone usage. In 1999 this charge dropped to \$45 a month.

(a) Find a linear function $C(t)$ that expresses the cost per month as a function of t, the number of years since 1995.

(b) Use the function of part (a) to predict the monthly phone usage charge in 2009.

20. (a) _____

(b) _____

21. The table at the right shows the sales of digital cameras in the U.S. in several recent years.

Year	*Sales* (*in millions*)
1996	\$483
1997	\$519
1998	\$1207
1999	\$1825
2000	\$2033

(a) Use linear regression to find a linear function that can be used to predict the sales of digital cameras x years after 1996.

(b) Predict the sales of digital cameras in 2008.

21. (a) _____

(b) _____

22. Find the domain of $g(x) = \dfrac{x+4}{2x-5}$.

22. _____

23. Find the following, given that $g(x) = -3x + 1$ and $h(x) = x^2 + 3$.

(a) $g(5)$
(b) $g(0)$
(c) $g(t) + 2$
(d) $(h \cdot g)(-2)$
(e) Any zeros of $g(x)$
(f) The domain of h/g

23. (a) _____

(b) _____

(c) _____

(d) _____

(e) _____

(f) _____

Find an equation of the line.

24. Containing $(-1, -3)$ and perpendicular to the line $4x - y = 3$

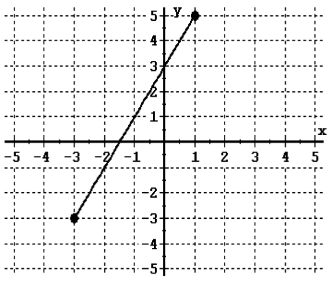
24. _____

25. Containing $(-1, -3)$ and parallel to the line $4x - y = 3$

25. _____

1. For the following graph of f, determine

(a) $f(-2)$;
(b) the domain of f;
(c) any x-value for which $f(x) = 1$; and
(d) the range of f.



1. (a) _____

(b) _____

(c) _____

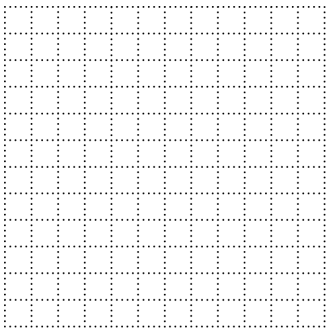
(d) _____

2. The function $S(t) = 0.58t + 0.48$ can be used to estimate the total U.S. sales of DVDs, in billions of dollars, t years after 1997.
(a) Predict the total U.S. sales of DVDs in 2008.
(b) What do the numbers 0.58 and 0.48 signify?

2. (a) _____

(b) _____

3. There were 4.6 thousand students enrolled at St. Pauls' College in 2001 and 6.5 thousand students enrolled in 2005. Draw a graph and estimate the number of students enrolled at St. Paul's College in 2003.



3. _____

Find the slope and *y*-intercept.

4. $f(x) = -\frac{4}{7}x + 10$ **4.** _____

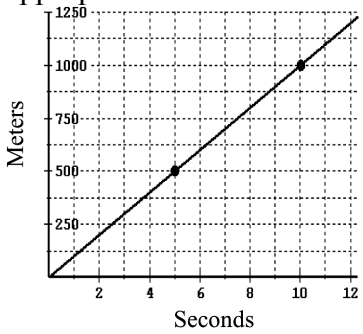
5. $-5y - 6x = 15$ **5.** _____

Find the slope of the line containing the following points. If the slope is undefined, state so.

6. (–5, 2) and (4, –3) **6.** _____

7. (–7.2, –2.3) and (3.1, –2.3) **7.** _____

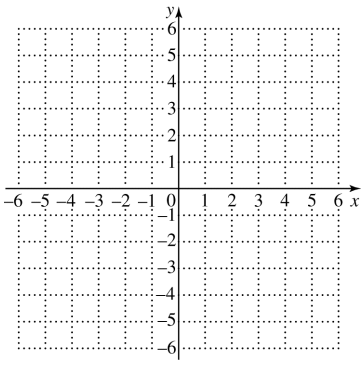
8. Find the rate of change for the graph below. Use appropriate units. **8.** _____



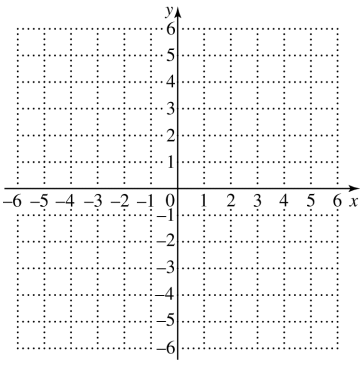
9. Find a linear function whose graph has slope –8 and *y*-intercept (0, 4). **9.** _____

Graph by hand.

10. $x = 3$

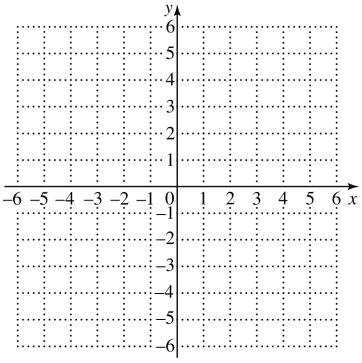


11. $f(x) = 2x - 5$

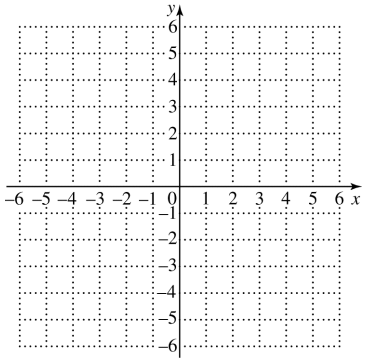


Graph by hand.

12. $y - 4 = -\frac{1}{6}(x + 1)$



13. $2 - x = 5$



14. Determine whether the standard viewing window shows the x- and y-intercepts of the graph of $f(x) = -11x + 4$.

14. _____

Determine without graphing whether each pair of lines is parallel, perpendicular, or neither.

15. $y = 4x + 9,$
$4y - x = -3$

15. _____

16. $-2y + 3 = -4x,$
$4x + 2y = 13$

16. _____

17. Which of these are linear equations?

(a) $8y - 3 = 0$ (b) $3x - 4y = 4$ (c) $2a^2 + 7b = 1$

17. _____

18. Find an equation in point-slope form of the line with slope 3 and containing (–7, –2).

18. _____

19. Use function notation to write an equation for the line containing (6, 2) and (3, –4).

19. _____

20. In 1995, 8% of instructional classrooms in public schools had Internet access. In 1998, 51% of classrooms had Internet access. Let $P(t)$ represent the percent of instructional classrooms with internet access t years after 1995.

(a) Find a linear function that fits the data.

(b) Use the function of part (a) to approximate the percentage of classrooms with Internet access in 2001.

20. (a) _____

(b) _____

21. The table at the right shows the sales of pagers in the U.S. in several recent years.

Year	*Sales* (*in millions*)
1996	\$460
1997	\$550
1998	\$660
1999	\$750
2000	\$790

(a) Use linear regression to find a linear function that can be used to predict the sales of pagers x years after 1996.

(b) Predict the sales of pagers in 2006.

21. (a) _____

(b) _____

22. Find the domain of $g(x) = \dfrac{x-2}{3x-2}$.

22. _____

23. Find the following, given that $g(x) = -4x - 2$ and $h(x) = x - 3$.

(a) $g(-3)$
(b) $g(0)$
(c) $g(t) + 2$
(d) $(g \cdot h)(5)$
(e) Any zeros of $g(x)$
(f) The domain of g/h

23. (a) _____

(b) _____

(c) _____

(d) _____

(e) _____

(f) _____

Find an equation of the line.

24. Containing (2, 2) and parallel to the line $3x - 4y = -1$

24. _____

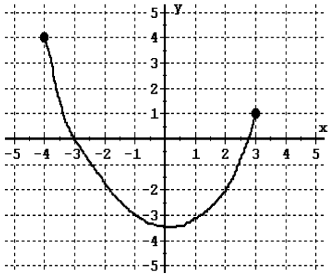
25. Containing (2, 2) and perpendicular to the line $3x - 4y = -1$

25. _____

1. For the following graph of f, determine

(a) $f(-1)$;
(b) the domain of f;
(c) any x-value for which $f(x) = -2$; and
(d) the range of f.

1. (a) _____
(b) _____
(c) _____
(d) _____



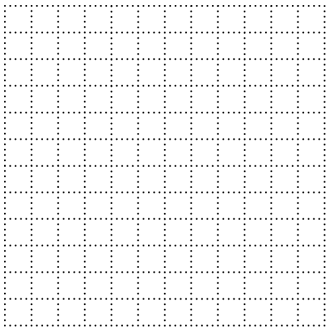
2. The function $S(t) = 0.5t + 15.3$ can be used to estimate the total U.S. sales of new cars, in billions of dollars, t years after 1996.

(a) Predict the total U.S. sales of new cars in 2004.
(b) What do the numbers 0.5 and 15.3 signify?

2. (a) _____
(b) _____

3. There were 6.8 thousand students enrolled at St. Ann's College in 2001 and 8.1 thousand students enrolled in 2005. Draw a graph and estimate the number of students enrolled at St. Ann's College in 2004.

3. _____



Find the slope and *y*-intercept.

4. $f(x) = \frac{5}{8}x - 3$ **4.** _____

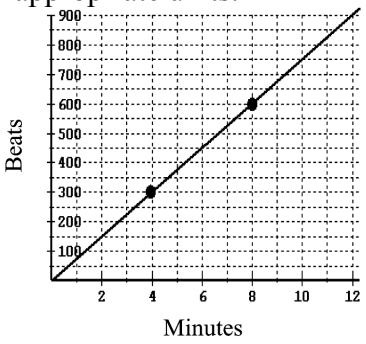
5. $2y - 5x = 7$ **5.** _____

Find the slope of the line containing the following points. If the slope is undefined, state so.

6. (7, –1) and (–3, 5) **6.** _____

7. (1.8, –9.1) and (4.2, –9.1) **7.** _____

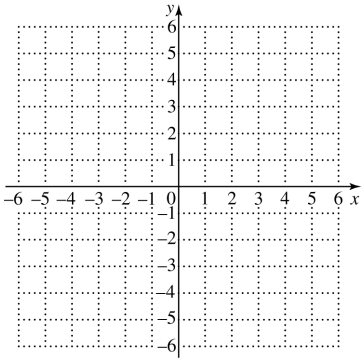
8. Find the rate of change for the graph below. Use appropriate units. **8.** _____



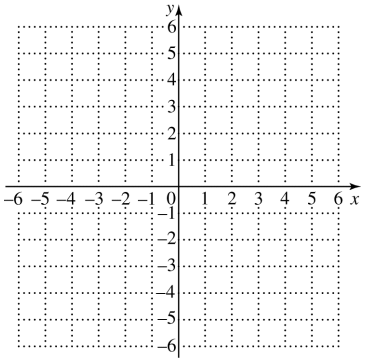
9. Find a linear function whose graph has slope 10 and *y*-intercept (0, –6). **9.** _____

Graph by hand.

10. $3 - y = 1$

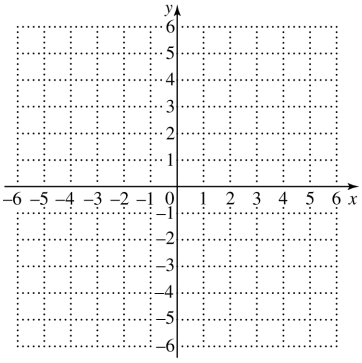


11. $3x - 4y = 7$

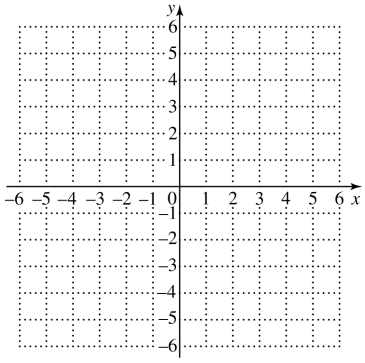


Graph by hand.

12. $y-3=-\frac{4}{3}(x+3)$



13. $3-x=4$



14. Determine whether the standard viewing window shows the x- and y-intercepts of the graph of $f(x)=-4x+8$.

14. _____

Determine without graphing whether each pair of lines is parallel, perpendicular, or neither.

15. $4y+5=3x,$
$-3x+4y=-7$

15. _____

16. $3y+9=5x,$
$-5x-3y=4$

16. _____

17. Which of these are linear equations?

17. _____

(a) $4x+2=0$ (b) $6x-3y=7$ (c) $4b-5a^2=12$

18. Find an equation in point-slope form of the line with slope –4 and containing (4, 2).

18. _____

19. Use function notation to write an equation for the line containing (–2, –5) and (–8, 2).

19. _____

20. In 1975, Lube Express charged \$6 for an oil change. In 2000, the cost for an oil change was \$21. Let C represent the cost for an oil change and t the number of years since 1975.

(a) Find a linear function $C(t)$ that fits the data.

(b) Use the function of part (a) to predict the cost of an oil change in 2010.

20. (a) _____

(b) _____

21. The table at the right shows the sales of flower gardening products in the U.S. in several recent years.

Year	*Sales* (*in millions*)
1997	\$3.404
1998	\$3.965
1999	\$3.976
2000	\$4.167
2001	\$3.926

(a) Use linear regression to find a linear function that can be used to predict the sales of flower gardening products x years after 1997.

(b) Predict the sales of flower gardening products in 2006.

21. (a) _____

(b) _____

22. Find the domain of $g(x) = \dfrac{x+3}{3x-5}$.

22. _____

23. Find the following, given that $g(x) = -3x + 4$ and $h(x) = x^2 - 3$.

(a) $h(-4)$
(b) $g(0)$
(c) $g(t) + 2$
(d) $(g \cdot h)(-3)$
(e) Any zeros of $g(x)$
(f) The domain of h/g

23. (a) _____

(b) _____

(c) _____

(d) _____

(e) _____

(f) _____

Find an equation of the line.

24. Containing (–2, 9) and perpendicular to the line $6x - y = 4$.

24. _____

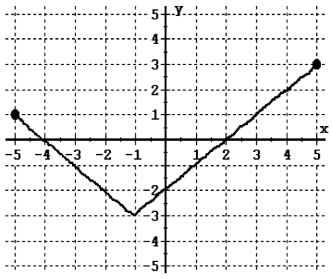
25. Containing (–2, 9) and parallel to the line $6x - y = 4$

25. _____

1. For the following graph of f, determine

(a) $f(-3)$;
(b) the domain of f;
(c) any x-value for which $f(x) = 1$; and
(d) the range of f.

1. (a) _____
(b) _____
(c) _____
(d) _____

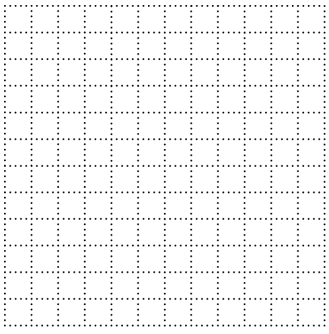


2. The function $S(t) = 0.5t + 11.9$ can be used to estimate the total U.S. sales of CD's, in billions of dollars, t years after 1998.
(a) Predict the total U.S. sales of CD's in 2004.
(b) What do the numbers 0.5 and 11.9 signify?

2. (a) _____
(b) _____

3. There were 11.8 thousand students enrolled at River City Community College in 2001 and 13.0 thousand students enrolled in 2005. Draw a graph and estimate the number of students enrolled at River City Community College in 2002.

3. _____



Find the slope and *y*-intercept.

4. $f(x) = \frac{3}{2}x + 5$ **4.** _____

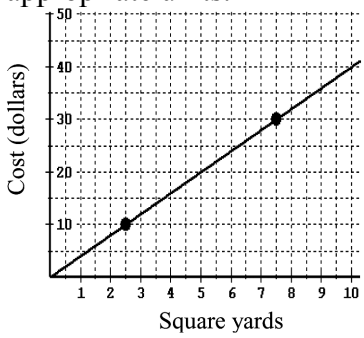
5. $8y + 3x = 4$ **5.** _____

Find the slope of the line containing the following points. If the slope is undefined, state so.

6. (–6, –5) and (2, 1) **6.** _____

7. (–4.3, 2.3) and (–4.3, 7.5) **7.** _____

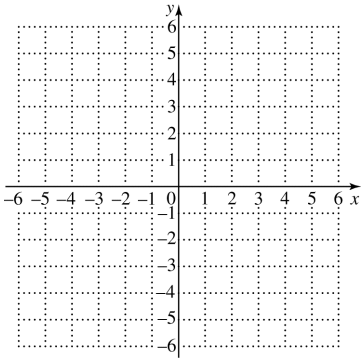
8. Find the rate of change for the graph below. Use appropriate units. **8.** _____



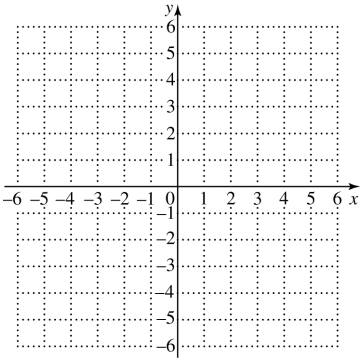
9. Find a linear function whose graph has slope –3 and *y*-intercept (0, –2). **9.** _____

Graph by hand.

10. $x + 4 = 1$

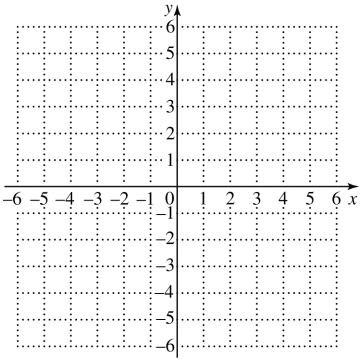


11. $6x - 5y = 15$

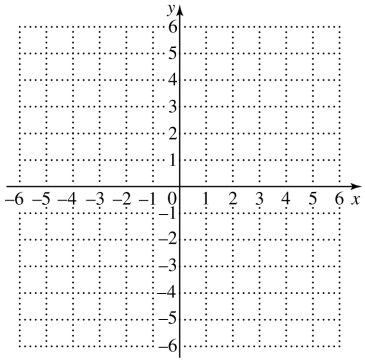


Graph by hand.

12. $y-1=-\frac{2}{5}(x+6)$



13. $6-x=5$



14. Determine whether the standard viewing window shows the x- and y-intercepts of the graph of $f(x)=16x-8$.

14. _____

Determine without graphing whether each pair of lines is parallel, perpendicular, or neither.

15. $y=3x+4,$
$-3y-x=6$

15. _____

16. $7y+4=9x,$
$-9x+7y=10$

16. _____

17. Which of these are linear equations?

17. _____

(a) $4a^2+3b=5$ (b) $3x+4y=2$ (c) $7x-3=0$

18. Find an equation in point-slope form of the line with slope 4 and containing (–2, 5).

18. _____

19. Use function notation to write an equation for the line containing (7, –2) and (5, –1).

19. _____

20. Suppose that 7.3 million lb of coffee are sold when the price is \$7 per pound, and 9.6 million lb are sold at \$6 per pound.

(a) Find a linear function that expresses the amount of coffee sold as a function of the price per pound.

(b) Use the function of part (a) to predict the consumer demand should the price drop to \$4 per pound.

20. (a) _____

(b) _____

21. The table at the right shows the number of local telephone service providers in the U.S. for the years 1997-2000.

Year	*Service Providers*
1997	2066
1998	2239
1999	2589
2000	2617

(a) Use linear regression to find a linear function that can be used to predict the number of service providers x years after 1997.

(b) Predict the number of service providers in 2008.

21. (a) _____

(b) _____

22. Find the domain of $g(x) = \dfrac{5x+8}{2x+9}$.

22. _____

23. Find the following, given that $g(x) = -x - 5$ and $h(x) = x^2 + 4$.

(a) $g(-8)$
(b) $g(0)$
(c) $g(t) + 2$
(d) $(g \cdot h)(3)$
(e) Any zeros of $g(x)$
(f) The domain of g/h

23. (a) _____

(b) _____

(c) _____

(d) _____

(e) _____

(f) _____

Find an equation of the line.

24. Containing (2, –3) and parallel to the line $5x - 2y = 6$

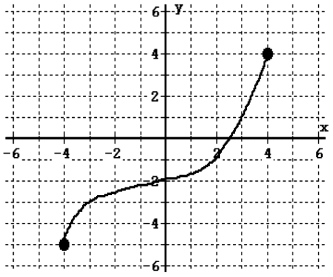
24. _____

25. Containing (2, –3) and perpendicular to the line $5x - 2y = 6$

25. _____

1. For the following graph of f, determine

(a) $f(0)$;
(b) the domain of f;
(c) any x-value for which $f(x) = -1$; and
(d) the range of f.



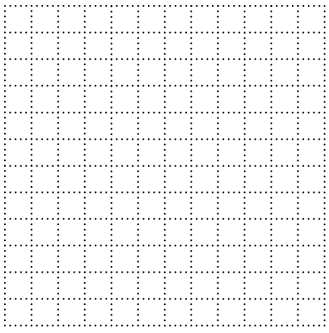
1. (a) _____
(b) _____
(c) _____
(d) _____

2. The function $S(t) = 2.1t + 22.9$ can be used to estimate the total U.S. sales of bicycles, in millions of dollars, t years after 1997.

(a) Predict the total U.S. sales of bicycles in 2006.
(b) What do the numbers 2.1 and 22.9 signify?

2. (a) _____
(b) _____

3. There were 12.9 thousand students enrolled at Oak Hills Community College in 2001 and 13.6 thousand students enrolled in 2005. Draw a graph and estimate the number of students enrolled at Oak Hills Community College in 2003.



3. _____

Find the slope and *y*-intercept.

4. $f(x) = \frac{1}{3}x - 4$ **4.** _____

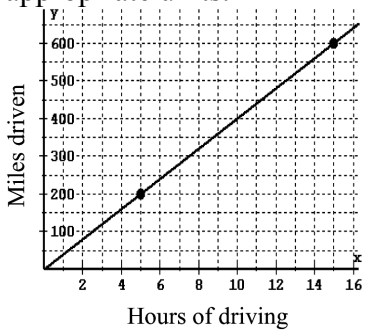
5. $6y - 5x = 12$ **5.** _____

Find the slope of the line containing the following points. If the slope is undefined, state so.

6. (–5, –3) and (6, 4) **6.** _____

7. (6.3, 5.6) and (–1.1, 5.6) **7.** _____

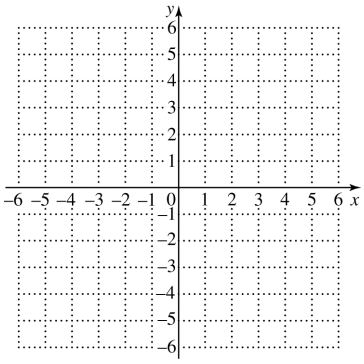
8. Find the rate of change for the graph below. Use appropriate units. **8.** _____



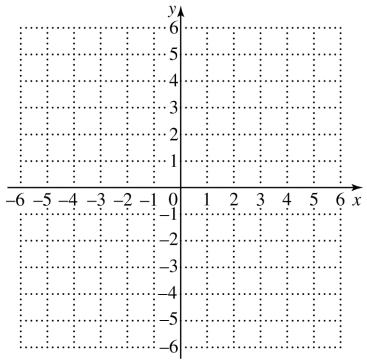
9. Find a linear function whose graph has slope 3 and *y*-intercept (0, 8). **9.** _____

Graph by hand.

10. $5 - y = 9$

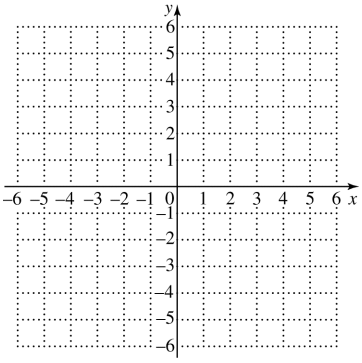


11. $-4x + 5y = 15$

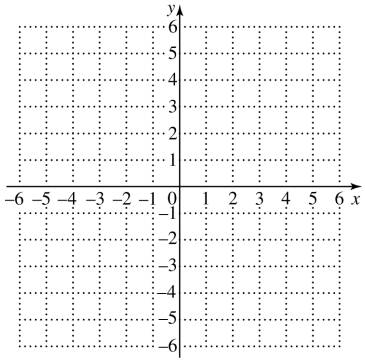


Graph by hand.

12. $y - 6 = -\frac{2}{3}(x + 5)$



13. $2 - x = 4$



14. Determine whether the standard viewing window shows the *x*- and *y*-intercepts of the graph of $f(x) = 4x + 13$.

14. _____

Determine without graphing whether each pair of lines is parallel, perpendicular, or neither.

15. $y = 7x + 9,$
$7y + x = 8$

15. _____

16. $5y + 2 = 7x,$
$5x - 7y = 9$

16. _____

17. Which of these are linear equations?

17. _____

(a) $8x - 3y = 2$ (b) $8b - 3a^2 = 14$ (c) $9x - 3 = 0$

18. Find an equation in point-slope form of the line with slope –4 and containing (–6, 2).

18. _____

19. Use function notation to write an equation for the line containing (5, –1) and (–1, 3).

19. _____

20. If you rent a car for one day and drive it 300 miles, the cost is \$169. If you drive it for 500 miles, the cost is \$229. Let $C(m)$ represent the cost, in dollars, of driving m miles.

(a) Find a linear function that fits the data.

(b) Use the function of part (a) to find how much it will cost to rent the car for one day and drive it 650 miles.

20. (a) _____

(b) _____

21. The table at the right shows the sales of running shoes in the U.S. for the years 1996-2000.

Year	*Sales (in millions)*
1996	\$1132
1997	\$1482
1998	\$1469
1999	\$1502
2000	\$1638

(a) Use linear regression to find a linear function that can be used to predict the sales x years after 1996.

(b) Predict the number of service providers in 2009.

21. (a) _____

(b) _____

22. Find the domain of $g(x) = \dfrac{3x+1}{4x+3}$.

22. _____

23. Find the following, given that $g(x) = 2x - 1$ and $h(x) = x^2 - 5$.

(a) $h(-6)$
(b) $g(0)$
(c) $g(t) + 2$
(d) $(g \cdot h)(-3)$
(e) Any zeros of $g(x)$
(f) The domain of h/g

23. (a) _____

(b) _____

(c) _____

(d) _____

(e) _____

(f) _____

Find an equation of the line.

24. Containing (–4, –2) and perpendicular to the line $2x + 3y = 3$.

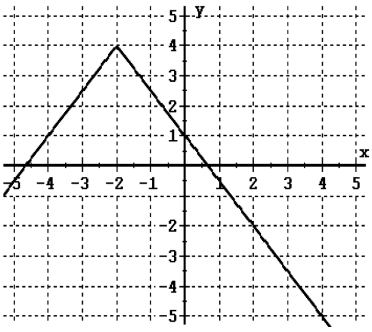
24. _____

25. Containing (–4, –2) and parallel to the line $2x + 3y = 3$.

25. _____

1. For the following graph of f, determine $f(2)$ and the domain of f.

1. _____



(a) 2; $\{x|x$ is a real number and $x \le 4\}$

(b) -2; $\{x|x$ is a real number$\}$

(c) -2; $\{x|x$ is a real number and $x \le 4\}$

(d) 2; $\{x|x$ is a real number$\}$

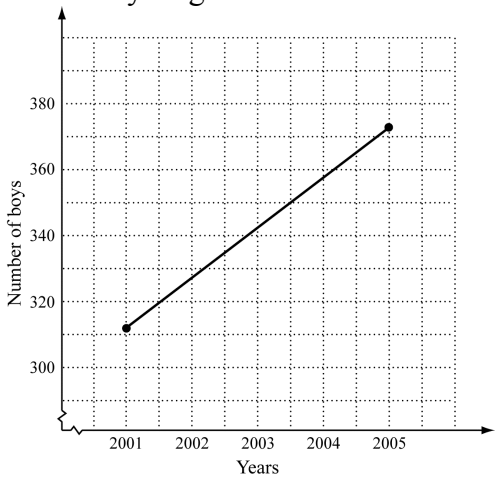
2. The function $S(t) = 0.5t + 18.3$ can be used to estimate the U.S. average expenditure per new car, in thousands of dollars, t years after 1995. Predict the average expenditure per new car in the U.S. in 2005.

2. _____

(a) \$23,300 (b) \$20,800 (c) \$40,000 (d) \$1,020,800

3. There were 314 boys registered for soccer in Lakewood County in 2001 and 372 boys registered in 2005. Use the graph to estimate the number of boys registered for soccer in 2004.

3. _____



(a) 342 (b) 348 (c) 357 (d) 365

4. Find the slope and the y-intercept of $8y - 3x = 16$. **4.** _____

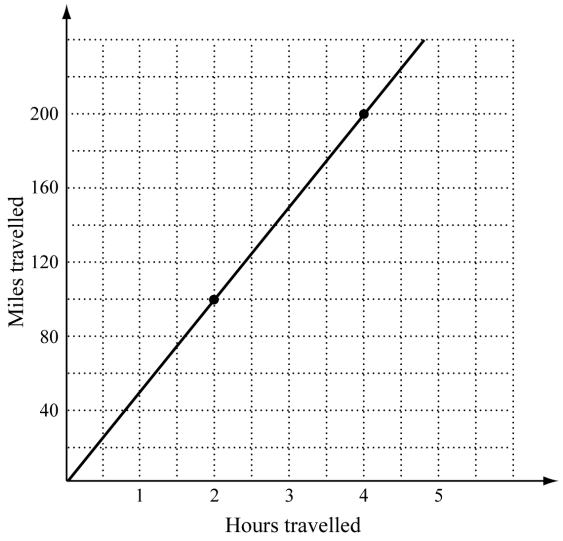
(a) Slope: $\frac{3}{8}$, y-intercept: (0, 2) (b) Slope: $-\frac{8}{3}$, y-intercept: (0, 2)

(c) Slope: $\frac{3}{8}$, y-intercept: (0, 8) (d) Slope: $-\frac{8}{3}$, y-intercept: (0, 8)

5. Find the slope of the line containing the points (–2, 4) and (6, –1). **5.** _____

(a) $-\frac{8}{5}$ (b) $\frac{5}{8}$ (c) $\frac{3}{4}$ (d) $-\frac{5}{8}$

6. Find the rate of change for the graph below. **6.** _____



(a) 45 miles per hour (b) 50 miles per hour

(c) 55 miles per hour (d) 60 miles per hour

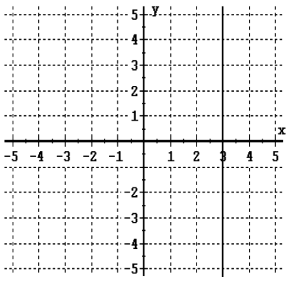
7. Find a linear function whose graph has slope –5 and y-intercept (0, –3). **7.** _____

(a) $f(x) = -5x + 3$ (b) $f(x) = 5x - 3$

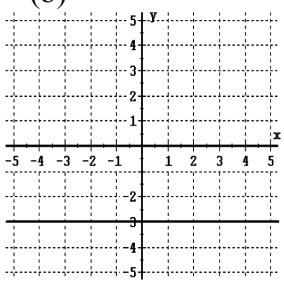
(c) $f(x) = -3x - 5$ (d) $f(x) = -5x - 3$

8. Which of the following is the graph of $x + 4 = 1$? **8.** _____

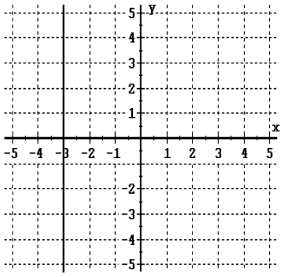
(a)



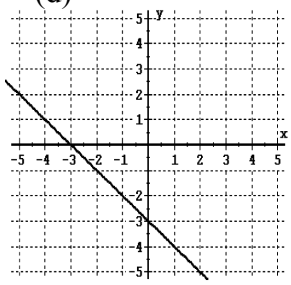
(b)



(c)



(d)



9. Determine whether the standard viewing window shows the x- and y-intercepts of the graph of $f(x) = -2x + 15$. **9.** _____

(a) Yes (b) No

10. Determine without graphing whether the given pair of lines is parallel, perpendicular, or neither. **10.** _____

$$y = 3x - 1$$
$$x + 3y = 9$$

(a) Parallel (b) Perpendicular (c) Neither

11. Which of the following is a linear equation? **11.** _____

(a) $\frac{y}{x} = 2x$ (b) $2b - 5a^2 = 6$ (c) $8x - 5y = 6$ (d) $3y - \frac{2}{x} = 0$

12. Find an equation in point-slope form of the line with slope –6 and containing (–5, 2). **12.** _____

(a) $y - 5 = -6(x + 2)$ (b) $y - 2 = -6(x + 5)$

(c) $y - 5 = -6(x - 2)$ (d) $y + 2 = -6(x - 5)$

13. Use function notation to write an equation for the line containing the points (4, –3) and (–4, 1). **13.** _____

(a) $f(x) = -\frac{1}{2}x - 1$ (b) $f(x) = -2x + 1$

(c) $f(x) = -2x - 7$ (d) $f(x) = -\frac{1}{2}x + \frac{5}{2}$

14. Suppose that 5.1 million lb of pecans are sold when the price is \$5.50 per pound and 4.5 million lb are sold at \$7.00 per pound. Find a linear function that expresses the amount of pecans sold, $N(p)$, in millions of pounds, as a function of the price per pound p. **14.** _____

(a) $N(p) = -0.4p + 7.3$ (b) $N(p) = -2.5p + 7.3$

(c) $N(p) = -0.4p + 8.8$ (d) $N(p) = -0.4p + 7.5$

15. Use the function of Exercise 14 to predict the amount of pecans that would be sold should the price increase to \$8.50 per pound. **15.** _____

(a) 4.1 million lb (b) 5.4 million lb

(c) 14.0 million lb (d) 3.9 million lb

16. The following table shows the amount of carbon monoxide in the air, in parts per million, for the years 1995-1999. **16.** _____

Year	*Carbon Monoxide (in ppm)*
1995	4.6
1996	4.3
1997	3.9
1998	3.8
1999	3.7

Use linear regression to find a linear function that can be used to predict the amount of carbon monoxide in the air x years after 1995.

(a) $A(x) = -0.23x + 4.75$ (b) $A(x) = -0.23x + 4.52$

(c) $A(x) = -0.23x + 26.37$ (d) $A(x) = -0.23x + 463.37$

17. Use the function found in Exercise 16 to predict the amount of carbon monoxide in the air in 2009. **17.** _____

(a) 460.15 ppm (b) 23.15 ppm (c) 1.3 ppm (d) 1.53 ppm

18. Find the domain of $f(x) = \dfrac{x+4}{2x+6}$. **18.** _____

(a) $\{x \mid x \neq -3\}$ (b) $\{x \mid x \neq -4\}$

(c) $\{x \mid x \neq -4, -3\}$ (d) $\{x \mid x \text{ is a real number}\}$

Consider $g(x) = 2x + 3$ and $h(x) = x^2 - 4$ for Exercises 19 through 24.

19. Find $h(-8)$. **19.** _____

(a) –68 (b) 12 (c) 60 (d) –20

20. Find $g(0)$. **20.** _____

(a) 0 (b) -4 (c) 5 (d) 3

21. Find $g(t) - 1$. **21.** _____

(a) $2t + 2$ (b) $2t + 3$ (c) $2t - 1$ (d) –1

22. Find $(g \cdot h)(-4)$ **22.** _____

(a) –60 (b) 100 (c) –220 (d) 60

23. Find any zeros of $g(x)$. **23.** _____

(a) $\dfrac{3}{2}$ (b) $-\dfrac{3}{2}$ (c) $-\dfrac{2}{3}$ (d) –3

24. _____

24. Find the domain of h/g.

(a) $\{x \mid x \neq 0\}$ (b) $\left\{x \mid x \neq -\dfrac{4}{3}\right\}$

(c) $\left\{x \mid x \neq -\dfrac{3}{2}\right\}$ (d) $\left\{x \mid x \neq -2, 2, -\dfrac{3}{2}\right\}$

25. Find an equation of the line containing (4, –7) and perpendicular to the line $4x-5y=7$. **25.** _____

(a) $y=\frac{4}{5}x-\frac{51}{5}$ (b) $y=\frac{5}{4}x-12$

(c) $y=-\frac{5}{4}x-2$ (d) $y=-\frac{4}{5}x-\frac{19}{5}$

26. Find k so that the line containing (–3, k) and (3, 6) is parallel to the line containing (3, 2) and (7, –5). **26.** _____

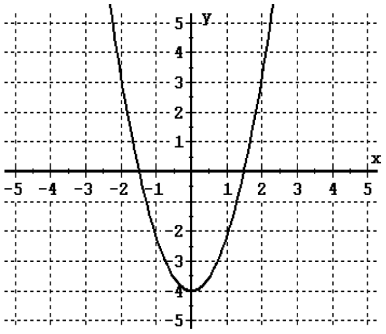
(a) $\frac{33}{2}$ (b) $-\frac{9}{2}$ (c) $\frac{18}{7}$ (d) $\frac{66}{7}$

27. Given that $f(x)=2x^2-3$ and $g(x)=7x+4$, determine a possible expression for $h(x)$ if the domain of $f/g/h$ is $\left\{x \middle| x \text{ is a real number } \textit{and } x\neq -\frac{4}{7} \textit{ and } x\neq \frac{1}{3}\right\}$. **27.** _____

(a) $h(x)=x-3$ (b) $h(x)=3x+1$

(c) $h(x)=4x+7$ (d) $h(x)=3x-1$

1. For the following graph of f, determine $f(1)$ and the domain of f. **1.** _____



(a) 2; $\{x|x$ is a real number and $x \geq -4\}$

(b) –2; $\{x|x$ is a real number$\}$

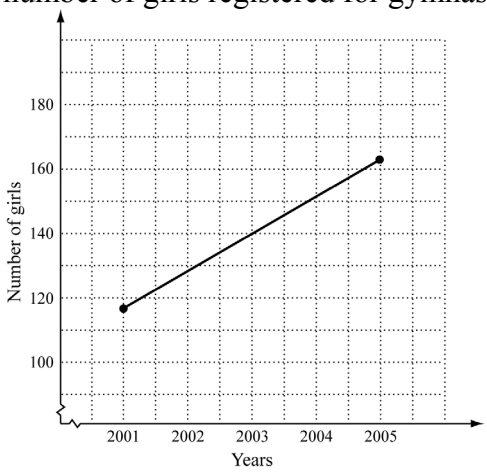
(c) –2; $\{x|x$ is a real number and $x \geq -4\}$

(d) 2; $\{x|x$ is a real number$\}$

2. The function $C(t) = 2.785t + 39.15$ can be used to estimate the average monthly cellular phone bill, in dollars, t years after 1998. Predict the average monthly cellular phone bill in 2005. **2.** _____

(a) \$58.64 (b) \$5,623.08 (c) \$58.65 (d) \$53.08

3. There were 118 girls registered for gymnastics in East Springfield in 2001 and 162 girls registered in 2005. Use the graph to estimate the number of girls registered for gymnastics in 2003. **3.** _____



(a) 132 (b) 139 (c) 145 (d) 150

4. Find the slope and the y-intercept of $-6y + 5x = 9$. **4.** _____

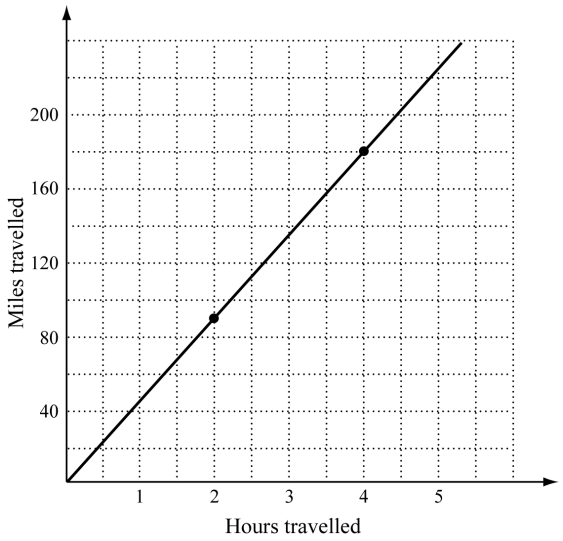
(a) Slope: $\frac{5}{6}$, y-intercept: $\left(0, \frac{9}{5}\right)$ (b) Slope: $\frac{5}{6}$, y-intercept: $\left(0, -\frac{3}{2}\right)$

(c) Slope: $\frac{6}{5}$, y-intercept: (0, 9) (d) Slope: $-\frac{6}{5}$, y-intercept: (0, 9)

5. Find the slope of the line containing the points (6, –4) and (–6, 2). **5.** _____

(a) $-\frac{1}{2}$ (b) –2 (c) 0 (d) undefined

6. Find the rate of change for the graph below. **6.** _____



(a) 45 miles per hour (b) 50 miles per hour

(c) 55 miles per hour (d) 60 miles per hour

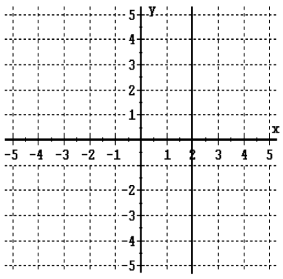
7. Find a linear function whose graph has slope 3 and y-intercept (0, 7). **7.** _____

(a) $f(x) = 3x$ (b) $f(x) = 7x + 3$

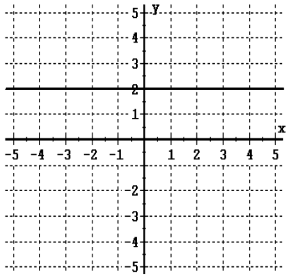
(c) $f(x) = 7x - 3$ (d) $f(x) = 3x + 7$

8. Which of the following is the graph of $f(x) = 2$? **8.** _____

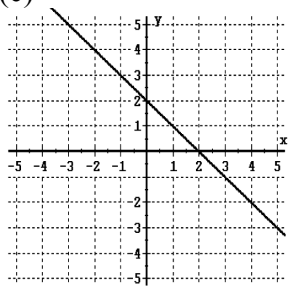
(a)



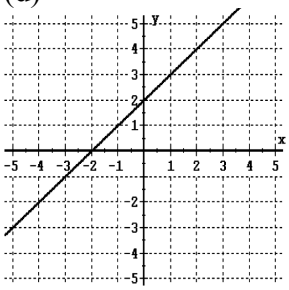
(b)



(c)



(d)



9. Determine whether the standard viewing window shows the x- and y-intercepts of the graph of $f(x) = 9x - 4$. **9.** _____

(a) Yes (b) No

10. Determine without graphing whether the given pair of lines is parallel, perpendicular, or neither. **10.** _____

$$6x + 4y = -2$$
$$2y = -3x + 1$$

(a) Parallel (b) Perpendicular (c) Neither

11. Which of the following is a linear equation? **11.** _____

(a) $\frac{2}{x+1} = 3x$ (b) $3x - 8 = 0$ (c) $3a^2 + 5b = 4$ (d) $4y + \frac{7}{y} = 8$

12. Find an equation in point-slope form of the line with slope –4 and containing (3, –8). **12.** _____

(a) $y + 8 = -4(x - 3)$ (b) $y - 3 = -4(x + 8)$

(c) $y - 8 = -4(x + 3)$ (d) $y + 3 = -4(x - 8)$

13. Use function notation to write an equation for the line containing the points (–2, –5) and (–6, 9). **13.** _____

(a) $f(x) = -\frac{2}{7}x + \frac{51}{7}$ (b) $f(x) = -\frac{7}{2}x - 12$

(c) $f(x) = \frac{7}{2}x + 30$ (d) $f(x) = \frac{2}{7}x + \frac{75}{7}$

14. If a car is rented for one day and driven 300 miles, the cost is \$69.95. If it is driven for 375 miles, the cost is \$81.20. Let $C(m)$ represent the cost, in dollars, of driving m miles. Find a linear function that fits the data. **14.** _____

(a) $C(m) = 0.15m + 24.95$ (b) $C(m) = 6.7m - 166.3$

(c) $C(m) = 0.15m + 69.95$ (d) $C(m) = -0.15m + 126.2$

15. Use the function of Exercise 14 to find how much it would cost to rent the car for one day and drive it 520 miles. **15.** _____

(a) \$48.20 (b) \$102.95 (c) \$3317.70 (d) \$147.95

16. The following table shows the waste generated in the U.S., in millions of tons, in the years 1996-2000. **16.** _____

Year	*Waste Generated*
1996	209.2
1997	219.1
1998	223.4
1999	231.0
2000	231.9

Use linear regression to find a linear function that can be used to predict the amount of waste generated x years after 1996.

(a) $y = 5.73x - 11225.62$ (b) $y = 5.73x - 338.62$

(c) $y = 5.73x + 117.08$ (d) $y = 5.73x + 211.46$

17. Use the function found in Exercise 16 to predict the amount of waste generated in 2007. **17.** _____

(a) 117.08 million tons (b) 211.46 million tons

(c) 274.49 million tons (d) 338.62 million tons

18. Find the domain of $f(x) = \dfrac{x-3}{3x-12}$. **18.** _____

(a) $\{x \mid x \neq 3\}$ (b) $\{x \mid x \neq 3, 4\}$

(c) $\{x \mid x \neq 4\}$ (d) $\{x \mid x$ is a real number$\}$

Consider $g(x) = 6x - 4$ and $h(x) = x^2 - 9$ for Exercises 19 through 24.

19. Find $h(-5)$. **19.** _____

(a) 16 (b) –34 (c) –19 (d) 34

20. Find $g(0)$. **20.** _____

(a) 2 (b) -4 (c) -9 (d) 4

21. Find $g(t) - 1$. **21.** _____

(a) $6t - 4$ (b) -1 (c) $6t - 1$ (d) $6t - 5$

22. Find $(g \cdot h)(3)$. **22.** _____

(a) –135 (b) 207 (c) –117 (d) 0

23. Find any zeros of $g(x)$. **23.** _____

(a) $\dfrac{2}{3}$ (b) $\dfrac{3}{2}$ (c) $-\dfrac{2}{3}$ (d) -4

24. Find the domain of h/g. **24.** _____

(a) $\{x \mid x \neq 0\}$ (b) $\left\{x \mid x \neq \dfrac{3}{2}\right\}$

(c) $\left\{x \mid x \neq \dfrac{2}{3}\right\}$ (d) $\left\{x \mid x \neq \dfrac{2}{3}, 3\right\}$

25. Find an equation of the line containing (–3, –6) and perpendicular to the line $4x+3y=5$. **25.** _____

(a) $y=-\frac{4}{3}x-10$ (b) $y=\frac{3}{4}x-\frac{15}{4}$

(c) $y=\frac{3}{4}x-\frac{3}{2}$ (d) $y=-\frac{3}{4}x-\frac{33}{4}$

26. The graph of the function $f(x)=mx+b$ contains the points (a, 2) and (–5, b). Express a in terms of b if the graph is parallel to the line $3x-9y=-5$. **26.** _____

(a) $a=7-2b$ (b) $a=1-3b$ (c) $a=3-b$ (d) $a=-5+b$

27. Given that $f(x)=3x^2+4$ and $g(x)=5x+2$, determine a possible expression for $h(x)$ if the domain of $f/g/h$ is $\left\{x \middle| x \text{ is a real number } and\ x\neq -\frac{2}{5}\ and\ x\neq \frac{4}{3}\right\}$. **27.** _____

(a) $h(x)=2x+5$ (b) $h(x)=3x+4$

(c) $h(x)=3x-4$ (d) $h(x)=4x-3$