

LESSON  
1.6

Exercise  
Set A

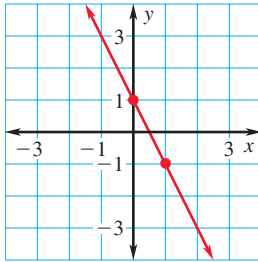


**MM1A1b** Graph the basic functions  $f(x) = x^n$ , where  $n = 1$  to 3,  $f(x) = \sqrt{x}$ ,  $f(x) = |x|$ , and  $f(x) = \frac{1}{x}$ .

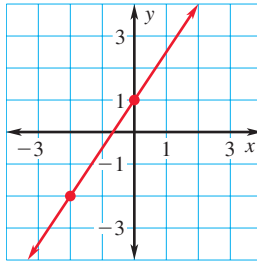
**MM1A1d** Investigate and explain the characteristics of a function: domain, range, zeros, intercepts, intervals of increase and decrease, maximum and minimum values, and end behavior.

Identify the slope and y-intercept of the line whose graph is shown.

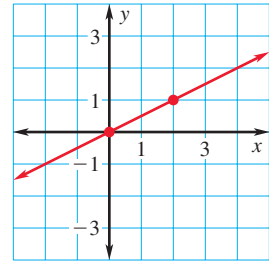
1.



2.



3.



Identify the slope and y-intercept of the line with the given equation.

4.  $y = 5x - 4$

5.  $y = 10 - 4x$

6.  $9x + y = 8$

7.  $12x + 3y = 9$

8.  $6x - 2y = 2$

9.  $2x + 5y = 10$

10.  $9x - 3y = -1$

11.  $4y + 6x = 2$

12.  $8y - 2x = 5$

13.  $5x + 5y = 3$

14.  $-4y = 16$

15.  $6x = 12$

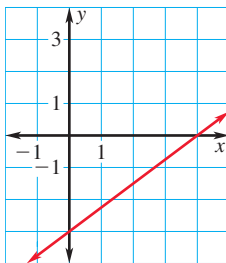
Match the equation with its graph.

16.  $3x + 4y = 12$

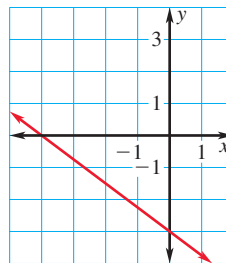
17.  $3x + 4y = -12$

18.  $3x - 4y = 12$

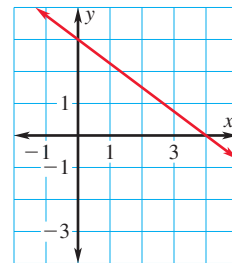
A.



B.



C.



Graph the equation.

19.  $y = -7x + 2$

20.  $y = 5x + 4$

21.  $y = -x + 9$

22.  $y = \frac{1}{5}x$

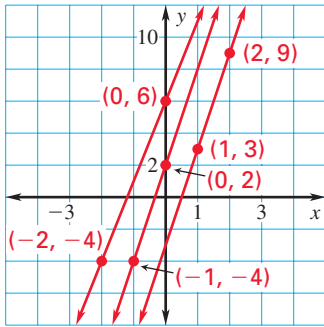
23.  $y = -\frac{2}{3}x + 1$

24.  $y = \frac{4}{3}x - 5$

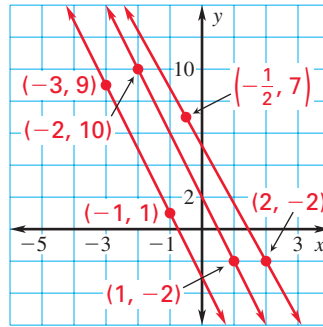
## Exercise Set A *(continued)*

Determine which lines are parallel.

25.



26.



Tell whether the graphs of the two equations are **parallel lines**, **perpendicular lines**, or **neither**.

27.  $y = 8x - 3$ ,  $8x + y = 3$

28.  $2x + y = 5$ ,  $-6 + 2x = y$

29.  $2x + y = 5$ ,  $y = 0.5x - 3$

30.  $y = -0.6x + 2$ ,  $5y + 3x = 8$

31.  $8x + 3y = 9$ ,  $8y - 4 = 3x$

32.  $10x + 2y = 7$ ,  $5x - y = 6$

**33. Squirrels** A family of squirrels takes up residence in the roof of your house. You call a company to get rid of the squirrels. The company traps the squirrels and then releases them in a wooded area. The company charges \$30 to drop off the traps and then charges \$15 for each squirrel it traps. The total cost  $C$  (in dollars) is given by the equation  $C = 30 + 15s$  where  $s$  is the number of squirrels that are taken away.

- Graph the equation.
- Suppose the company raises its fee to \$18 to take away each squirrel so that the total cost for  $s$  squirrels is given by the equation  $C = 30 + 18s$ . Graph the equation in the same coordinate plane as the equation in part (a).
- How much more does it cost for the company to trap 4 squirrels after the fee is raised?

**34. Water Usage** A new toilet model has two different flush settings in order to conserve water. One setting uses 1.6 gallons of water per flush and the other setting uses 0.8 gallon of water per flush. The total amount  $w$  (in gallons) of water used in the first setting is given by the equation  $w = 1.6f$  where  $f$  is the number of times the toilet is flushed. The total amount of water used in the second setting is given by the equation  $w = 0.8f$ .

- Graph both equations in the same coordinate plane. What do the slopes and the  $w$ -intercepts mean in this situation?
- How much more water is used by the first setting if the toilet is flushed 10 times?

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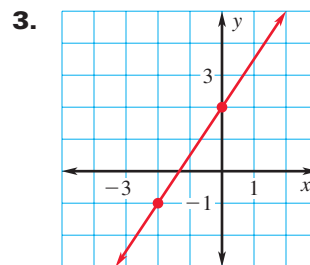
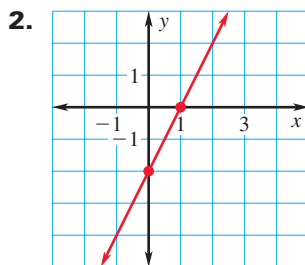
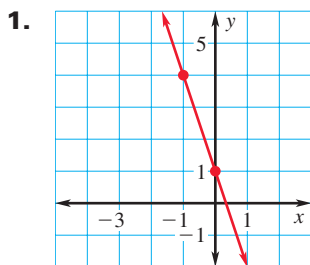
Exercise  
Set B



**MM1A1b** Graph the basic functions  $f(x) = x^n$ , where  $n = 1$  to 3,  $f(x) = \sqrt{x}$ ,  $f(x) = |x|$ , and  $f(x) = \frac{1}{x}$ .

**MM1A1d** Investigate and explain the characteristics of a function: domain, range, zeros, intercepts, intervals of increase and decrease, maximum and minimum values, and end behavior.

Identify the slope and y-intercept of the line whose graph is shown.



Identify the slope and y-intercept of the line with the given equation.

4.  $y = \frac{2}{3}x - 4$

5.  $y = 19 - 6x$

6.  $6x + 2y = 14$

7.  $3x + 2y = 8$

8.  $4x - 5y = 15$

9.  $6y - 8x = 18$

10.  $8x - 10y = 14$

11.  $4x - 9y = 18$

12.  $5y - 3x = 12$

13.  $2x - 5y = 10$

14.  $-12x - 4y = -2$

15.  $-x - 10y = -20$

Graph the equation.

16.  $y = \frac{5}{3}x$

17.  $y = \frac{3}{2}x - 2$

18.  $y = -\frac{3}{4}x + 6$

19.  $7x - y = 3$

20.  $6x + 2y = 5$

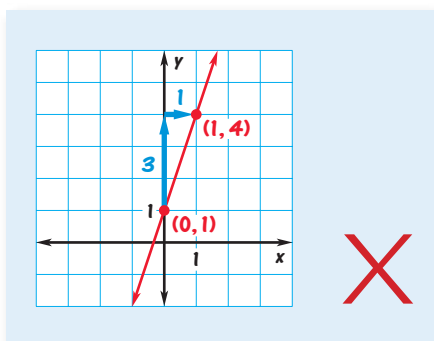
21.  $4x - 3y = -6$

22.  $0.5x - 0.2y = 1$

23.  $8y - 2x = 4$

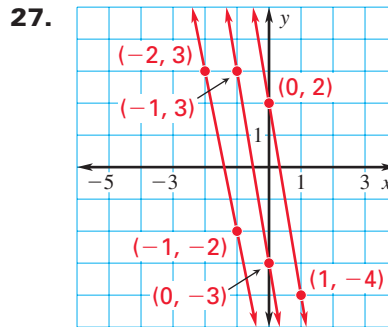
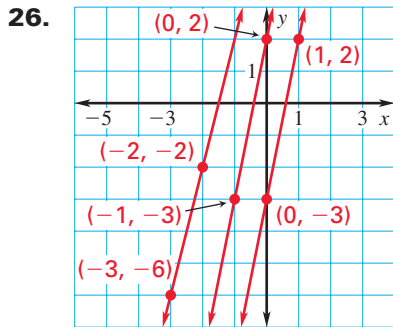
24.  $-6x - 4y = 8$

25. **Error Analysis** Describe and correct the error in graphing the equation  $y = 3x - 1$ .



## Exercise Set B (continued)

Determine which lines are parallel.



Tell whether the graphs of the two equations are **parallel lines**, **perpendicular lines**, or **neither**.

28.  $x - 3y = 6, y = -\frac{1}{3}x$

29.  $4x - 8y = 8, y = 0.5x - 1$

30.  $2x - y = 7, 4y = -2x - 4$

31.  $y + 3x = 8, 6x = 2y + 4$

Find the value of  $k$  so that the lines through the given points are parallel.

32. Line 1:  $(-5, -2)$  and  $(0, 0)$   
Line 2:  $(1, 6)$  and  $(k, 7)$

34. Line 1:  $(-2, 8)$  and  $(-4, -6)$   
Line 2:  $(-5, k)$  and  $(0, -3)$

33. Line 1:  $(-2, -7)$  and  $(3, 8)$   
Line 2:  $(-3, -6)$  and  $(2, k)$

35. Line 1:  $(-2, k)$  and  $(4, -5)$   
Line 2:  $(-2, 3)$  and  $(8, -2)$

36. **Power Tools** You are considering buying a variable-speed drill. One model you are considering has two different speeds. The number of revolutions  $r$  of the drill bit in  $m$  minutes using the slower speed is given by the equation  $r = 300m$ . The number of revolutions using the faster speed is given by the equation  $r = 1200m$ .

- Graph both equations in the same coordinate plane. What do the  $r$ -intercepts mean in this situation?
- How many more revolutions in 3 minutes does the faster speed on the drill make than the slower speed?

37. **Plumber** A plumber charges \$50 to come to your house to diagnose a problem and then charges \$30 an hour for labor if you decide to have the plumber repair the problem. The total cost  $C$  (in dollars) is given by the equation  $C = 50 + 30t$  where  $t$  is the time (in hours) the plumber takes to repair the problem.

- Graph the equation.
- Suppose the plumber raises the charge for labor to \$32 per hour so that the total cost for a repair that takes  $t$  hours is given by the equation  $C = 50 + 32t$ . Graph the equation in the same coordinate plane as the equation in part (a).
- How much more does it cost for a repair if it takes the plumber 3 hours to complete the job? What do you notice about the difference in the costs? *Explain.*