12. A manufacturer has a monthly fixed cost of \$100,000 and a production cost of \$14 for each unit produced. The product sells for \$20/unit.
a. What is the cost function?
b. What is the revenue function?
c. What is the profit function?
d. Compute the profit (loss) corresponding to production levels of 12,000 and 20,000 units.

13. Find the constants m and b in the linear function $f(x) = mx + b$ such that $f(0) = 2$ and $f(3) = -1$.

14. Find the constants m and b in the linear function $f(x) = mx + b$ such that $f(2) = 4$ and the straight line represented by f has slope -1.

15. Linear Depreciation An office building worth \$1 million when completed in 2005 is being depreciated linearly over 50 yr. What will be the book value of the building in 2010? In 2015? (Assume the scrap value is \$0.)

16. Linear Depreciation An automobile purchased for use by the manager of a firm at a price of \$24,000 is to be depreciated using the straight-line method over 5 yr. What will be the book value of the automobile at the end of 3 yr? (Assume the scrap value is \$0.)

17. Consumption Functions A certain economy's consumption function is given by the equation

$$C(x) = 0.75x + 6$$

where $C(x)$ is the personal consumption expenditure in billions of dollars and x is the disposable personal income in billions of dollars. Find $C(0)$, $C(50)$, and $C(100)$.

18. Sales Tax In a certain state, the sales tax T on the amount of taxable goods is 6% of the value of the goods purchased (x), where both T and x are measured in dollars.
a. Express T as a function of x.
b. Find $T(200)$ and $T(5.60)$.

19. Social Security Benefits Social Security recipients receive an automatic cost-of-living adjustment (COLA) once each year. Their monthly benefit is increased by the same percentage that consumer prices have increased during the preceding year. Suppose consumer prices have increased by 5.3% during the preceding year.
a. Express the adjusted monthly benefit of a Social Security recipient as a function of his or her current monthly benefit.
b. If Carlos Garcia's monthly Social Security benefit is now \$1020, what will be his adjusted monthly benefit?

20. Profit Functions AutoTime, a manufacturer of 24-hr variable timers, has a monthly fixed cost of \$48,000 and a production cost of \$8 for each timer manufactured. The timers sell for \$14 each.
a. What is the cost function?
b. What is the revenue function?
c. What is the profit function?
d. Compute the profit (loss) corresponding to production levels of 4000, 6000, and 10,000 timers, respectively.

21. Profit Functions The management of TMI finds that the monthly fixed costs attributable to the production of their 100-watt light bulbs is \$12,100.00. If the cost of producing each twin-pack of light bulbs is \$.60 and each twin-pack sells for \$1.15, find the company's cost function, revenue function, and profit function.

22. Linear Depreciation In 2005, National Textile installed a new machine in one of its factories at a cost of \$250,000. The machine is depreciated linearly over 10 yr with a scrap value of \$10,000.
a. Find an expression for the machine's book value in the tth year of use ($0 \le t \le 10$).
b. Sketch the graph of the function of part (a).
c. Find the machine's book value in 2009.
d. Find the rate at which the machine is being depreciated.

23. Linear Depreciation A workcenter system purchased at a cost of \$60,000 in 2007 has a scrap value of \$12,000 at the end of 4 yr. If the straight-line method of depreciation is used,
a. Find the rate of depreciation.
b. Find the linear equation expressing the system's book value at the end of t yr.
c. Sketch the graph of the function of part (b).
d. Find the system's book value at the end of the third year.

24. Linear Depreciation Suppose an asset has an original value of \$$C$ and is depreciated linearly over N yr with a scrap value of \$$S$. Show that the asset's book value at the end of the tth year is described by the function

$$V(t) = C - \left(\frac{C - S}{N}\right)t$$

Hint: Find an equation of the straight line passing through the points $(0, C)$ and (N, S). (Why?)

25. Rework Exercise 15 using the formula derived in Exercise 24.

26. Rework Exercise 16 using the formula derived in Exercise 24.

27. Drug Dosages A method sometimes used by pediatricians to calculate the dosage of medicine for children is based on the child's surface area. If a denotes the adult dosage (in milligrams) and if S is the child's surface area (in square meters), then the child's dosage is given by

$$D(S) = \frac{Sa}{1.7}$$

a. Show that D is a linear function of S.
Hint: Think of D as having the form $D(S) = mS + b$. What are the slope m and the y-intercept b?
b. If the adult dose of a drug is 500 mg, how much should a child whose surface area is 0.4 m^2 receive?

28. Drug Dosages Cowling's rule is a method for calculating pediatric drug dosages. If a denotes the adult dosage (in milligrams) and if t is the child's age (in years), then the

child's dosage is given by

$$D(t) = \left(\frac{t+1}{24}\right)a$$

a. Show that D is a linear function of t.
Hint: Think of $D(t)$ as having the form $D(t) = mt + b$. What is the slope m and the y-intercept b?

b. If the adult dose of a drug is 500 mg, how much should a 4-yr-old child receive?

29. BROADBAND INTERNET HOUSEHOLDS The number of U.S. broadband Internet households stood at 20 million at the beginning of 2002 and was projected to grow at the rate of 6.5 million households per year for the next 8 yr.

a. Find a linear function $f(t)$ giving the projected number of U.S. broadband Internet households (in millions) in year t, where $t = 0$ corresponds to the beginning of 2002.

b. What is the projected number of U.S. broadband Internet households at the beginning of 2010?

Source: Jupiter Research

30. DIAL-UP INTERNET HOUSEHOLDS The number of U.S. dial-up Internet households stood at 42.5 million at the beginning of 2004 and was projected to decline at the rate of 3.9 million households per year for the next 6 yr.

a. Find a linear function f giving the projected U.S. dial-up Internet households (in millions) in year t, where $t = 0$ corresponds to the beginning of 2004.

b. What is the projected number of U.S. dial-up Internet households at the beginning of 2010?

Source: Strategy Analytics Inc.

31. CELSIUS AND FAHRENHEIT TEMPERATURES The relationship between temperature measured in the Celsius scale and the Fahrenheit scale is linear. The freezing point is 0°C and 32°F, and the boiling point is 100°C and 212°F.

a. Find an equation giving the relationship between the temperature F measured in the Fahrenheit scale and the temperature C measured in the Celsius scale.

b. Find F as a function of C and use this formula to determine the temperature in Fahrenheit corresponding to a temperature of 20°C.

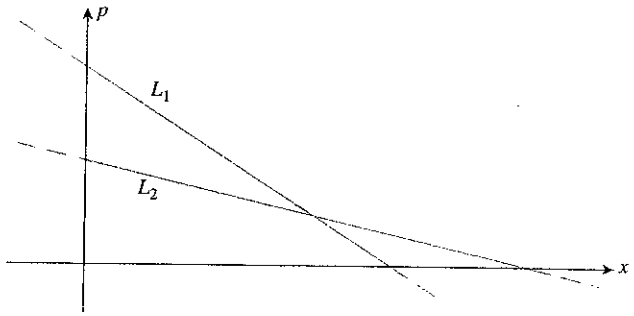
c. Find C as a function of F and use this formula to determine the temperature in Celsius corresponding to a temperature of 70°F.

32. CRICKET CHIRPING AND TEMPERATURE Entomologists have discovered that a linear relationship exists between the rate of chirping of crickets of a certain species and the air temperature. When the temperature is 70°F, the crickets chirp at the rate of 120 chirps/min, and when the temperature is 80°F, they chirp at the rate of 160 chirps/min.

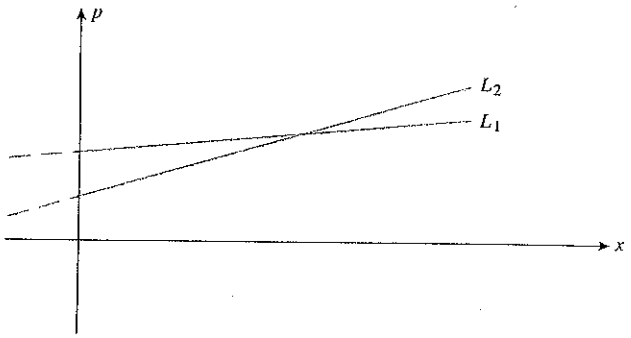
a. Find an equation giving the relationship between the air temperature T and the number of chirps/min N of the crickets.

b. Find N as a function of T and use this formula to determine the rate at which the crickets chirp when the temperature is 102°F.

33. DEMAND FOR CD CLOCK RADIOS In the accompanying figure, L_1 is the demand curve for the model A CD clock radio manufactured by Ace Radio, and L_2 is the demand curve for the model B CD clock radio. Which line has the greater slope? Interpret your results.



34. SUPPLY OF CD CLOCK RADIOS In the accompanying figure, L_1 is the supply curve for the model A CD clock radio manufactured by Ace Radio, and L_2 is the supply curve for the model B CD clock radio. Which line has the greater slope? Interpret your results.



For each demand equation in Exercises 35–38, where x represents the quantity demanded in units of 1000 and p is the unit price in dollars, (a) sketch the demand curve and (b) determine the quantity demanded corresponding to the given unit price p.

35. $2x + 3p - 18 = 0; p = 4$

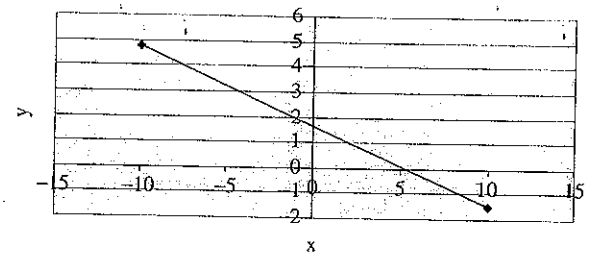
36. $5p + 4x - 80 = 0; p = 10$

37. $p = -3x + 60; p = 30$ **38.** $p = -0.4x + 120; p = 80$

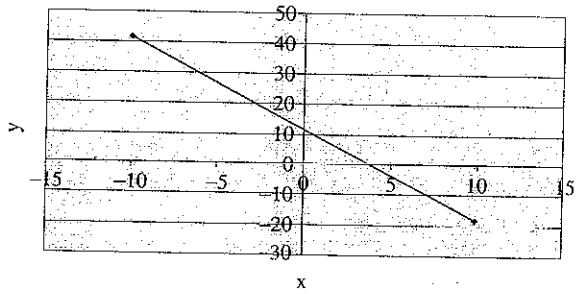
39. DEMAND FUNCTIONS At a unit price of $55, the quantity demanded of a certain commodity is 1000 units. At a unit price of $85, the demand drops to 600 units. Given that it is linear, find the demand equation. Above what price will there be no demand? What quantity would be demanded if the commodity were free?

40. DEMAND FUNCTIONS The quantity demanded for a certain brand of portable CD players is 200 units when the unit price is set at $90. The quantity demanded is 1200 units when the unit price is $40. Find the demand equation and sketch its graph.

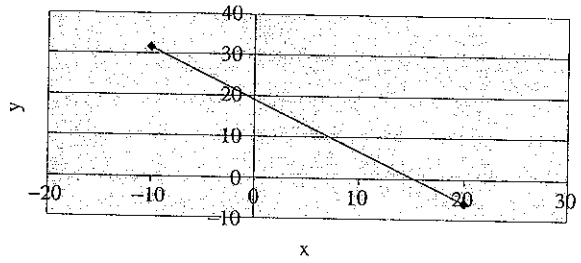
3. $1.6x + 5.1y = 8.16$



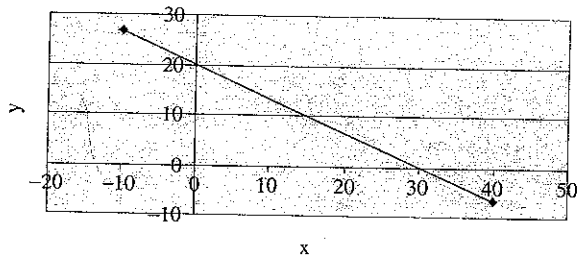
5. $12.1x + 4.1y - 49.61 = 0$



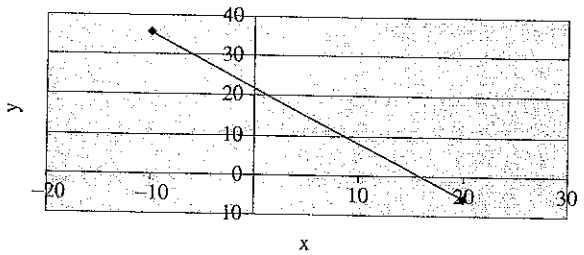
7. $20x + 16y = 300$



9. $20x + 30y = 600$



11. $22.4x + 16.1y - 352 = 0$



Exercises 1.3, page 33

1. Yes; $y = -\frac{2}{3}x + 2$ 3. Yes; $y = \frac{1}{2}x + 2$ 5. Yes; $y = \frac{1}{2}x + \frac{9}{4}$ 7. No 9. No

11. **a.** $C(x) = 8x + 40{,}000$
b. $R(x) = 12x$
c. $P(x) = 4x - 40{,}000$
d. Loss of \$8000; profit of \$8000

13. $m = -1$; $b = 2$

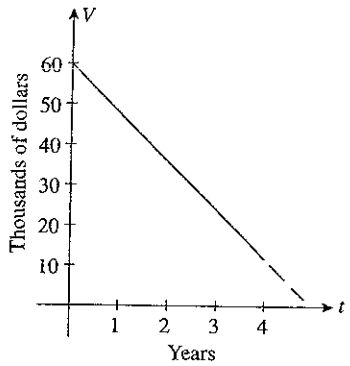
15. \$900,000; \$800,000

17. \$6 billion; \$43.5 billion; \$81 billion

19. **a.** $y = 1.053x$ **b.** \$1074.06

21. $C(x) = 0.6x + 12{,}100$; $R(x) = 1.15x$; $P(x) = 0.55x - 12{,}100$

23. **a.** \$12,000/yr **b.** $V = 60{,}000 - 12{,}000t$
c.



d. \$24,000

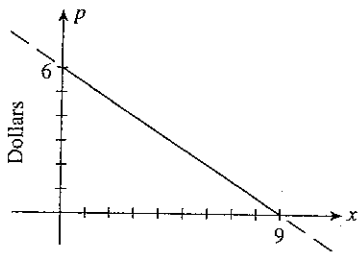
25. \$900,000; \$800,000

27. **a.** $m = a/1.7$; $b = 0$ **b.** 117.65 mg

29. $f(t) = 6.5t + 20$ $(0 \le t \le 8)$; 72 million

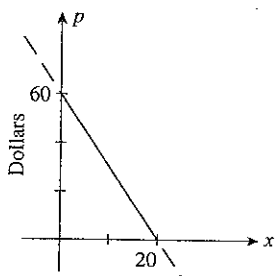
31. **a.** $F = \frac{9}{5}C + 32$ **b.** 68°F **c.** 21.1°C 33. L_2

35. **a.**



b. 3000

37. **a.**



b. 10,000

39. $p = -\frac{3}{40}x + 130$; \$130; 1733 41. 2500 units

and $x = 5$. Substituting this value of x in the second equation gives $p = 3.5$. Thus, the equilibrium quantity is 5000 units and the equilibrium price is \$350 (Figure 40).

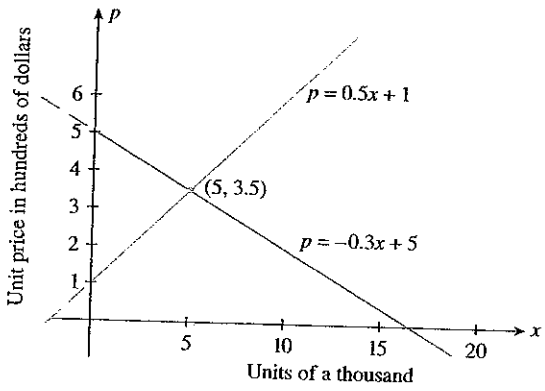


FIGURE 40
Market equilibrium occurs at the point (5, 3.5).

1.4 Self-Check Exercises

1. Find the point of intersection of the straight lines with equations $2x + 3y = 6$ and $x - 3y = 4$.
2. There is no demand for a certain model of a disposable camera when the unit price is \$12. However, when the unit price is \$8, the quantity demanded is 8000/wk. The suppliers will not market any cameras if the unit price is \$2 or lower. At \$4/camera, however, the manufacturer will market 5000 cameras/wk. Both the demand and supply functions are known to be linear.
   a. Find the demand equation.
   b. Find the supply equation.
   c. Find the equilibrium quantity and price.

Solutions to Self-Check Exercises 1.4 can be found on page 49.

1.4 Concept Questions

1. Explain why you would expect the intersection of a linear demand curve and a linear supply curve to lie in the first quadrant.
2. Explain the meaning of each term:
   a. Break-even point
   b. Break-even quantity
   c. Break-even revenue
3. Explain the meaning of each term:
   a. Market equilibrium
   b. Equilibrium quantity
   c. Equilibrium price

1.4 Exercises

In Exercises 1–6, find the point of intersection of each pair of straight lines.

1. $y = 3x + 4$
   $y = -2x + 14$
2. $y = -4x - 7$
   $-y = 5x + 10$
3. $2x - 3y = 6$
   $3x + 6y = 16$
4. $2x + 4y = 11$
   $-5x + 3y = 5$
5. $y = \frac{1}{4}x - 5$
   $2x - \frac{3}{2}y = 1$
6. $y = \frac{2}{3}x - 4$
   $x + 3y + 3 = 0$

In Exercises 7–10, find the break-even point for the firm whose cost function C and revenue function R are given.

7. $C(x) = 5x + 10{,}000$; $R(x) = 15x$
8. $C(x) = 15x + 12{,}000$; $R(x) = 21x$
9. $C(x) = 0.2x + 120$; $R(x) = 0.4x$
10. $C(x) = 150x + 20{,}000$; $R(x) = 270x$
11. BREAK-EVEN ANALYSIS AutoTime, a manufacturer of 24-hr variable timers, has a monthly fixed cost of \$48,000 and a production cost of \$8 for each timer manufactured. The units sell for \$14 each.

a. Sketch the graphs of the cost function and the revenue function and thereby find the break-even point graphically.
b. Find the break-even point algebraically.
c. Sketch the graph of the profit function.
d. At what point does the graph of the profit function cross the x-axis? Interpret your result.

12. BREAK-EVEN ANALYSIS A division of Carter Enterprises produces "Personal Income Tax" diaries. Each diary sells for \$8. The monthly fixed costs incurred by the division are \$25,000, and the variable cost of producing each diary is \$3.
a. Find the break-even point for the division.
b. What should be the level of sales in order for the division to realize a 15% profit over the cost of making the diaries?

13. BREAK-EVEN ANALYSIS A division of the Gibson Corporation manufactures bicycle pumps. Each pump sells for \$9, and the variable cost of producing each unit is 40% of the selling price. The monthly fixed costs incurred by the division are \$50,000. What is the break-even point for the division?

14. LEASING Ace Truck Leasing Company leases a certain size truck for \$30/day and \$.15/mi, whereas Acme Truck Leasing Company leases the same size truck for \$25/day and \$.20/mi.
a. Find the functions describing the daily cost of leasing from each company.
b. Sketch the graphs of the two functions on the same set of axes.
c. If a customer plans to drive at most 70 mi, from which company should he rent a truck for a single day?

15. DECISION ANALYSIS A product may be made using machine I or machine II. The manufacturer estimates that the monthly fixed costs of using machine I are \$18,000, whereas the monthly fixed costs of using machine II are \$15,000. The variable costs of manufacturing 1 unit of the product using machine I and machine II are \$15 and \$20, respectively. The product sells for \$50 each.
a. Find the cost functions associated with using each machine.
b. Sketch the graphs of the cost functions of part (a) and the revenue functions on the same set of axes.
c. Which machine should management choose in order to maximize their profit if the projected sales are 450 units? 550 units? 650 units?
d. What is the profit for each case in part (c)?

16. ANNUAL SALES The annual sales of Crimson Drug Store are expected to be given by $S = 2.3 + 0.4t$ million dollars t yr from now, whereas the annual sales of Cambridge Drug Store are expected to be given by $S = 1.2 + 0.6t$ million dollars t yr from now. When will Cambridge's annual sales first surpass Crimson's annual sales?

17. LCDs VERSUS CRTs The global shipments of traditional cathode-ray tube monitors (CRTs) is approximated by the equation

$$y = -12t + 88 \qquad (0 \le t \le 3)$$

where y is measured in millions and t in years, with $t = 0$ corresponding to the beginning of 2001. The equation

$$y = 18t + 13.4 \qquad (0 \le t \le 3)$$

gives the approximate number (in millions) of liquid crystal displays (LCDs) over the same period. When did the global shipments of LCDs first overtake the global shipments of CRTs?

Source: International Data Corporation

18. DIGITAL VERSUS FILM CAMERAS The sales of digital cameras (in millions of units) in year t is given by the function

$$f(t) = 3.05t + 6.85 \qquad (0 \le t \le 3)$$

where $t = 0$ corresponds to 2001. Over that same period, the sales of film cameras (in millions of units) is given by

$$g(t) = -1.85t + 16.58 \qquad (0 \le t \le 3)$$

a. Show that more film cameras than digital cameras were sold in 2001.
b. When did the sales of digital cameras first exceed those of film cameras?

Source: Popular Science

19. U.S. FINANCIAL TRANSACTIONS The percentage of U.S. transactions by check between the beginning of 2001 ($t = 0$) and the beginning of 2010 ($t = 9$) is projected to be

$$f(t) = -\frac{11}{9}t + 43 \qquad (0 \le t \le 9)$$

whereas the percentage of transactions done electronically during the same period is projected to be

$$g(t) = \frac{11}{3}t + 23 \qquad (0 \le t \le 9)$$

a. Sketch the graphs of f and g on the same set of axes.
b. Find the time when transactions done electronically first exceeded those done by check.

Source: Foreign Policy

20. BROADBAND VERSUS DIAL-UP The number of U.S. broadband Internet households (in millions) between the beginning of 2004 ($t = 0$) and the beginning of 2008 ($t = 4$) was estimated to be

$$f(t) = 6.5t + 33 \qquad (0 \le t \le 4)$$

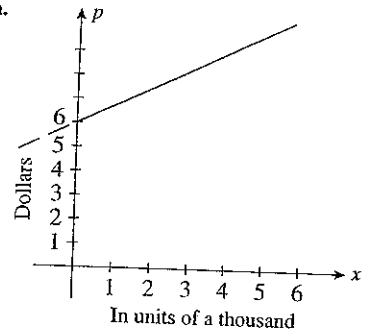
Over the same period, the number of U.S. dial-up Internet households (in millions) was estimated to be

$$g(t) = -3.9t + 42.5 \qquad (0 \le t \le 4)$$

a. Sketch the graphs of f and g on the same set of axes.
b. Solve the equation $f(t) = g(t)$ and interpret your result.

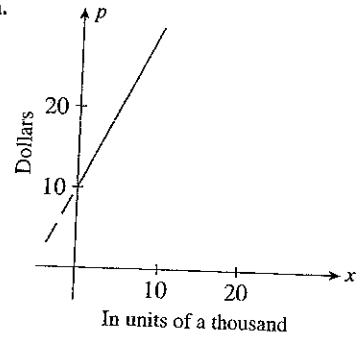
Source: Strategic Analytics Inc.

43. **a.**



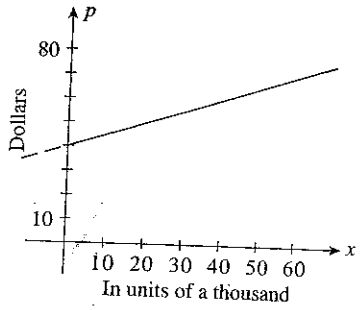
b. 2667 units

45. **a.**



b. 2000 units

47. $p = \frac{1}{2}x + 40$ (x is measured in units of a thousand)



60,000 units

49. False

Using Technology Exercises 1.3, page 39

1. 2.2875 3. 2.880952381 5. 7.2851648352

7. 2.4680851064

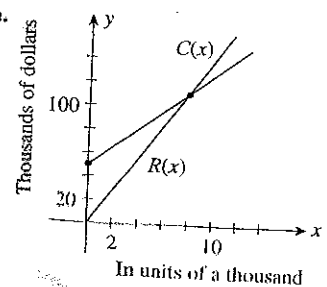
Exercises 1.4, page 46

1. (2, 10) 3. $(4, \frac{2}{3})$ 5. (−4, −6)

7. 1000 units; \$15,000

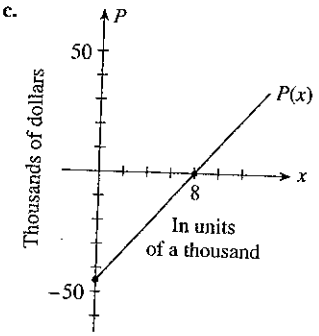
9. 600 units; \$240

11. **a.**



b. 8000 units; \$112,000

c.

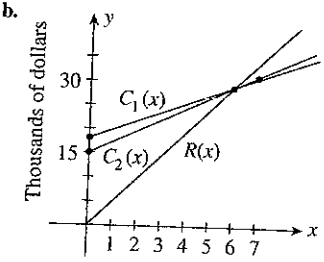


d. (8000, 0)

13. 9259 units; \$83,331

15. **a.** $C_1(x) = 18{,}000 + 15x$
$C_2(x) = 15{,}000 + 20x$

b.

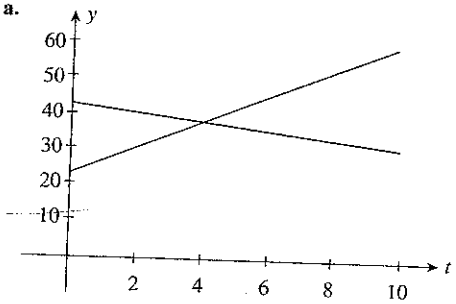


c. Machine II; machine II; machine I

d. (\$1500); \$1500; \$4750

17. Middle of 2003

19. **a.**



b. Feb. 2005

21. 8000 units; \$9 23. 2000 units; \$18

25. **a.** $p = -0.08x + 725$
b. $p = 0.09x + 300$
c. 2500 DVD players; \$525

27. 300 fax machines; \$600

29. **a.** $\frac{b-d}{c-a}, \frac{bc-ad}{c-a}$
b. If c is increased, x gets smaller and p gets larger.
c. If b is decreased, x decreases and p decreases.

31. True

33. **a.** $m_1 = m_2$ and $b_2 \neq b_1$
b. $m_1 \neq m_2$
c. $m_1 = m_2$ and $b_1 = b_2$

Using Technology Exercises 1.4, page 51

1. (0.6, 6.2) 3. (3.8261, 0.1304)

5. (386.9091, 145.3939)

10. NET SALES The management of Kaldor, a manufacturer of electric motors, submitted the accompanying data in its annual stockholders report. The following table shows the net sales (in millions of dollars) during the 5 yr that have elapsed since the new management team took over.

Year, x	1	2	3	4	5
Net Sales, y	426	437	460	473	477

(The first year the firm operated under the new management corresponds to the time period $x = 1$, and the four subsequent years correspond to $x = 2, 3, 4$, and 5.)

a. Determine the equation of the least-squares line for these data.
b. Draw a scatter diagram and the least-squares line for these data.
c. Use the result obtained in part (a) to predict the net sales for the upcoming year.

11. MASS-TRANSIT SUBSIDIES The following table gives the projected state subsidies (in millions of dollars) to the Massachusetts Bay Transit Authority (MBTA) over a 5-yr period.

Year, x	1	2	3	4	5
Subsidy, y	20	24	26	28	32

a. Find an equation of the least-squares line for these data.
b. Use the result of part (a) to estimate the state subsidy to the MBTA for the eighth year ($x = 8$).

Source: Massachusetts Bay Transit Authority

12. INFORMATION SECURITY SOFTWARE SALES As online attacks persist, spending on information security software continues to rise. The following table gives the forecast for the worldwide sales (in billions of dollars) of information security software through 2007 ($t = 0$ corresponds to 2002):

Year, t	0	1	2	3	4	5
Spending, y	6.8	8.3	9.8	11.3	12.8	14.9

a. Find an equation of the least-squares line for these data.
b. Use the result of part (a) to forecast the spending on information security software in 2008, assuming that the trend continues.

Source: International Data Corporation

13. U.S. DRUG SALES The following table gives the total sales of drugs (in billions of dollars) in the United States from 1999 ($t = 0$) through 2003:

Year, t	0	1	2	3	4
Sales, y	126	144	171	191	216

a. Find an equation of the least-squares line for these data.
b. Use the result of part (a) to predict the total sales of drugs in 2005, assuming that the trend continued.

Source: IMS Health

14. IRA ASSETS The value of all individual retirement accounts (in trillions of dollars) from 2002 through 2005 is summarized in the following table:

Year	2002	2003	2004	2005
Value, y	2.6	3.0	3.3	3.7

a. Letting $x = 2$ denote 2002, find an equation of the least-squares line for these data.
b. Use the results of part (a) to estimate the value of all IRAs in 2006, assuming that the trend continued.
c. Use the result of part (a) to estimate how fast the value of all IRAs was growing over the period from 2002 through 2005.

Source: ici.org

15. PC GROWTH The following table gives the projected shipment of personal computers worldwide (in millions of units) from 2004 through 2008 ($x = 4$ corresponds to 2004):

Year, x	4	5	6	7	8
Number, y	174	205	228	253	278

a. Find an equation of the least-squares line for these data.
b. Use the results of part (a) to estimate the shipment of PCs worldwide in 2009, assuming that the projected trend continues.

Source: International Data Corporation

16. ONLINE SPENDING The convenience of shopping on the Web combined with high-speed broadband access services are spurring online spending. The projected online spending per buyer (in dollars) from 2002 ($x = 0$) through 2008 ($x = 6$) is given in the following table:

Year, x	0	1	2	3	4	5	6
Spending, y	501	540	585	631	680	728	779

a. Find an equation of the least-squares line for these data.
b. Use the result of part (a) to estimate the rate of change of spending per buyer between 2002 and 2008.

Source: U.S. Department of Commerce

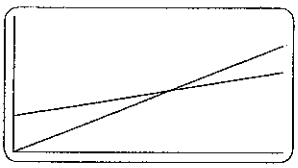
17. CALLING CARDS The market for prepaid calling cards is projected to grow steadily through 2008. The following table gives the projected sales of prepaid phone card sales (in billions of dollars) from 2002 through 2008 ($x = 0$ corresponds to 2002):

Year, x	0	1	2	3	4	5	6
Sales, y	3.7	4.0	4.4	4.8	5.2	5.8	6.3

a. Find an equation of the least-squares line for these data.
b. Use the result of part (a) to estimate the rate at which the sales of prepaid phone cards will grow over the period in question.

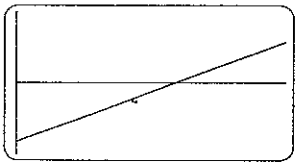
Source: Atlantic-ACM

7. **a.**



b. (3548.39, 27,996.77)

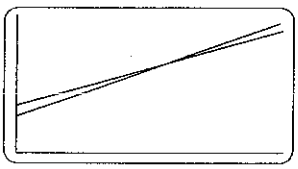
c.



x-intercept: 3548

9. **a.** $C_1(x) = 34 + 0.18x$; $C_2(x) = 28 + 0.22x$

b.

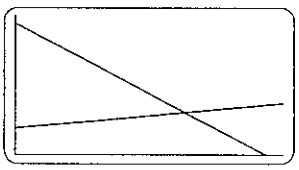


c. (150, 61)

d. If the distance driven is less than or equal to 150 mi, rent from Acme Truck Leasing; if the distance driven is more than 150 mi, rent from Ace Truck Leasing.

11. **a.** $p = -\frac{1}{10}x + 284$; $p = \frac{1}{60}x + 60$

b.



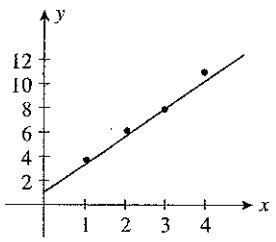
(1920, 92)

c. 1920/wk; $92/radio

Exercises 1.5, page 56

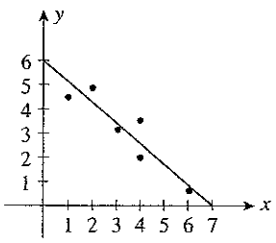
1. **a.** $y = 2.3x + 1.5$

b.



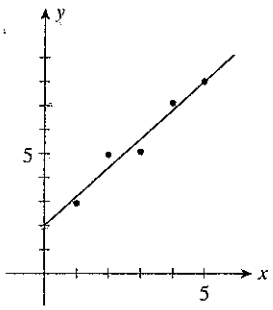
3. **a.** $y = -0.77x + 5.74$

b.



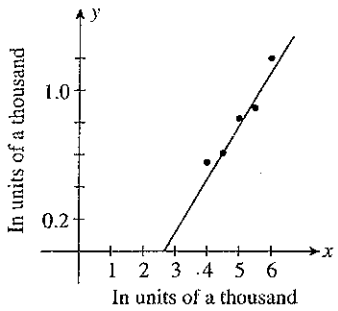
5. **a.** $y = 1.2x + 2$

b.



7. **a.** $y = 0.34x - 0.9$

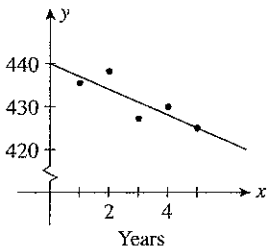
b.



c. 1276 applications

9. **a.** $y = -2.8x + 440$

b.



c. 420

11. **a.** $y = 2.8x + 17.6$ **b.** \$40,000,000

13. **a.** $y = 22.7t + 124.2$ **b.** \$260.4 billion

15. **a.** $y = 25.6x + 74$ **b.** 304 million

17. **a.** $y = 0.4x + 3.6$ **b.** \$436 million/yr

19. **a.** $y = 0.305x + 1.41$ **b.** \$0.305 billion/yr **c.** \$3.24 billion

21. **a.** $y = 0.4x + 5.22$ **b.** \$0.4 billion/yr

23. **a.** $y = 3.17x + 82.1$ **b.** \$113,800

25. **a.** $y = 0.09x + 15.90$ **b.** 19.50 yr **c.** 18.6 yr

27. $y = 0.23x + 1.16$ **b.** 2.8 billion

29. False 31. True

Using Technology Exercises 1.5, page 62

1. $y = 2.3596x + 3.8639$

3. $y = 1.1948x - 3.5525$

5. **a.** $y = 1.03x + 2.33$ **b.** \$10.57 billion