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Chapter 4 Cumulative Review (continued)

In Exercises 25–28, determine whether the relation is a function. Explain.

25. $(1, 8), (2, 8), (3, 8), (4, 8), (5, 8)$

26. $(-1, 7), (7, -3), (-3, -5), (-5, -1), (-1, 3)$

27.

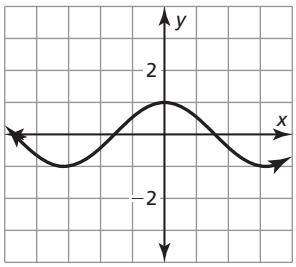
x	0	1	2	0
y	−1	0	1	2

28.

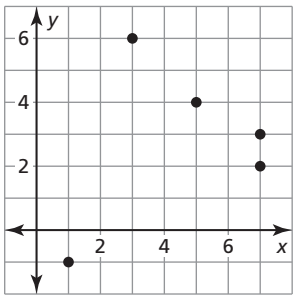
x	−2	0	2	4
y	1	1	1	1

In Exercises 29–31, find the domain and range of the relation and determine whether or not the graph represents a function.

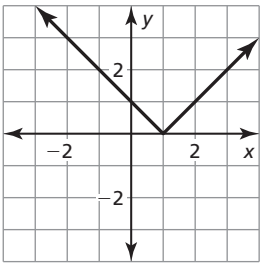
29.



30.



31.



32. The function $y = 2x + 10$ represents the amount of money in your piggy bank y (in dollars) after x weeks.

a. Identify the independent and dependent variables.

b. Find the domain and range of the function.

In Exercises 33–35, evaluate the function when $x = -3$, 0, and 4.

33. $f(x) = 2x + 1$

34. $g(x) = -x - 5$

35. $h(x) = 4 - 5x - 6$

In Exercises 36–38, graph the linear function.

36. $f(x) = 2x$

37. $w(x) = -\frac{2}{5}x + 4$

38. $h(x) = -2 - x$

39. The function $f(x) = \frac{1}{3}x + 4$ represents the distance in feet a snail is from a house x hours after it started crawling.

a. What is the snail's distance from the house after 9 hours?

b. How long will it take the snail to get 13 feet from the house?

In Exercises 40–42, find the x- and y-intercepts of the graph of the linear equation. Use the intercepts to graph the linear equations. Label the intercepts.

40. $3x + 9y = 36$

41. $4x + 5y = 20$

42. $-x + 9y = 11$

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Chapter 4 Cumulative Review (continued)

In Exercises 43–45, find the slope and *y*-intercept of the graph. Graph the linear equation.

43. $y = x - 3$ **44.** $y = \frac{3}{4}x$ **45.** $7x - 3y = 9$

In Exercises 46 and 47, use the graphs of *f* and *g* to describe the transformation from the graph of *f* to the graph of *g*.

46. $f(x) = 4x - 2;\ g(x) = -4x - 2$ **47.** $f(x) = 5x + 1;\ g(x) = 5x + 2$

In Exercises 48–50, graph the function. Compare the graph to the graph of $f(x) = |x|$. Describe the domain and range.

48. $t(x) = |x| - 3$ **49.** $r(x) = |x + 2|$ **50.** $h(x) = \frac{1}{3}|x|$

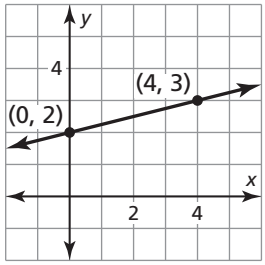
In Exercises 51–54, write an equation of the line with the given slope and *y*-intercept.

51. slope: 4; *y*-intercept: 12 **52.** slope: $-\frac{3}{4}$; *y*-intercept: -12

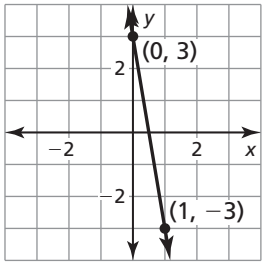
53. slope: $\frac{1}{2}$; *y*-intercept: $-\frac{2}{5}$ **54.** slope: -3; *y*-intercept: $\frac{1}{8}$

In Exercises 55–57, write an equation of the line in slope-intercept form.

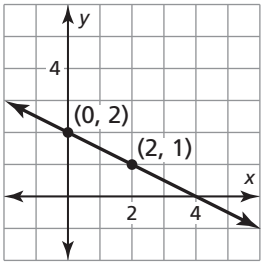
55.



56.



57.



In Exercises 58–61, write an equation in point-slope form of the line that passes through the given point and has the given slope.

58. $(3, 4);\ m = 5$ **59.** $(7, 0);\ m = -1$ **60.** $(3, -9);\ m = \frac{1}{2}$ **61.** $(-1, -2);\ m = -\frac{2}{7}$

In Exercises 62–65, write an equation in point-slope form of the line that passes through the given points.

62. $(2, 4), (5, 7)$ **63.** $(-2, 4), (7, 8)$ **64.** $(-5, -1), (-3, 7)$ **65.** $(0, 2), (3, 2)$

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Chapter 4 Cumulative Review (continued)

In Exercises 66–68, write an equation of the line that passes through the given point and is parallel to the given line.

66. $(2, 3); y = 3x - 1$ **67.** $(-4, 0); y = \frac{2}{3}x + 1$ **68.** $(-2, 7); 2x + y = 6$

In Exercises 69–71, write an equation of the line that passes through the given point and is perpendicular to the given line.

69. $(0, 2); y = -x + 1$ **70.** $(1, 2); y = -\frac{3}{4}x - 2$ **71.** $(-4, -2); 4x - 2y = 10$

In Exercises 72 and 73, make a scatter plot of the data. Tell whether *x* and *y* show a *positive*, a *negative*, or *no correlation*.

72.

x	−2	−2	−1	−1	0	1	2
y	−3	−1	−2	1	0	−1	2

73.

x	−3	−2	−2	0	2	2	4
y	2	0	−2	0	−1	2	−2

In Exercises 74–76, graph the arithmetic sequence.

74. $-4, 0, 4, 8, \ldots$ **75.** $3, 11, 19, 27, \ldots$ **76.** $-3, -9, -15, -21, \ldots$

In Exercises 77–79, determine whether the sequence is arithmetic. If so, find the common difference.

77. $2, 4, 7, 11, 16, 24, \ldots$ **78.** $45, 41, 37, 34, \ldots$ **79.** $7, 13, 19, 25, \ldots$

In Exercises 80 and 81, graph the function. Describe the domain and range.

80. $y = \begin{cases} 2x + 1, & \text{if } x \geq -1 \\ 3x - 1, & \text{if } x < -1 \end{cases}$

81. $y = \begin{cases} -\frac{1}{2}x + 2, & \text{if } x < -2 \\ \frac{1}{2}x - 3, & \text{if } x \geq -2 \end{cases}$