14. Evaluate $f(x) = x^2 + 2x - 1$ for $x = 3$ and $x = 1.5$. *(EXAMPLE 5)*

APPLICATION

15. INCOME A plumber charges \$24 per hour of work plus \$20.00 to make a service call. *(EXAMPLE 6)*

a. Write a linear function to model the plumber's wages, w, for the number of hours worked, h.

b. Find the plumber's wages for 5.5 hours of work.

Practice and Apply

State whether each relation represents a function.

16. $\{(0, 0), (1, 1)\}$

17. $\{(1, 2), (2, 2), (3, 2)\}$

18. $\{(1, -1), (1, -2), (1, -3)\}$

19. $\{(4, 1), (5, 2), (6, 3)\}$

20. $\left\{\left(\frac{1}{2}, 1\right), \left(\frac{2}{5}, 2\right), \left(\frac{1}{3}, 1\right)\right\}$

21. $\left\{\left(\frac{1}{3}, \frac{1}{4}\right), \left(\frac{1}{5}, \frac{1}{5}\right), \left(\frac{1}{4}, \frac{3}{4}\right)\right\}$

22. $\{(11, 0), (12, -1), (21, -2)\}$

23. $\{(0, 0), (2, 5), (3, 3)\}$

24. $\{(1, 7), (-1, 7), (1, -7)\}$

25. $\{(-1, 8), (-1, 7), (0, 9)\}$

26.

x	y
0	3
2	−5
2	1
4	7

27.

x	y
1	6
2	6
3	9
4	9

28.

x	y
4	−2
4	2
6	−3
6	3

29.

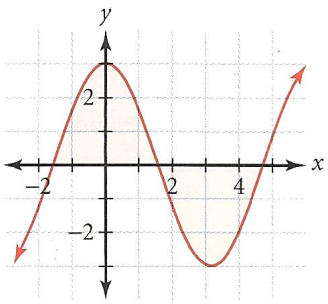
x	y
−5	8
−3	8
−1	−2
1	−2

30.

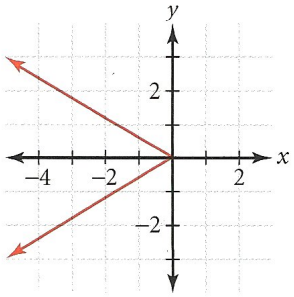
x	y
−2	−5
−2	−3
0	4
2	6

State whether each relation graphed below is a function. Explain.

31.



32.



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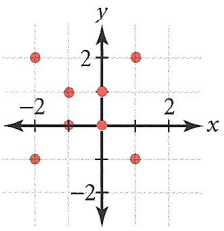

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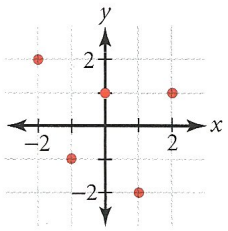

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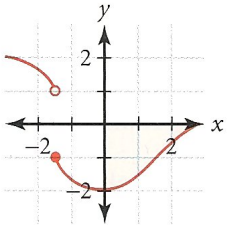
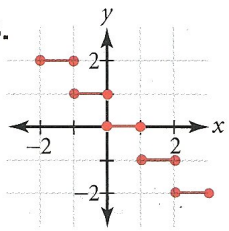


36.



State the domain and range of each function.

37. $\{(0, 2), (3, 4)\}$

38. $\{(1, 5), (2, 5), (3, 5)\}$

39. $\{(9, -1), (8, -2), (7, -3)\}$

40. $\{(4, 1), (5, 2), (6, 3)\}$

41. $\{(6, -6), (5, -5), (4, -4)\}$

42. $\{(0, 0), (1.5, 0), (2.5, 0)\}$

Evaluate each function for the given values of x.

43. $f(x) = 2x - 6$ for $x = 1$ and $x = 3$

44. $f(x) = 5 - 3x$ for $x = 1$ and $x = 3$

45. $g(x) = \frac{2x - 1}{3}$ for $x = -1$ and $x = 1$

46. $g(x) = \frac{x - 4}{5}$ for $x = -9$ and $x = 9$

47. $f(x) = 2x^2 - 3x$ for $x = 3$ and $x = -2.5$

48. $f(x) = -x^2 + 4x - 1$ for $x = 2$ and $x = 1.5$

49. $f(x) = \frac{1}{3}x^2$ for $x = -1$ and $x = \frac{3}{4}$

50. $f(x) = -4x^2$ for $x = \frac{3}{2}$ and $x = -2$

Graph each function, and state the domain and range.

51 $y = -\frac{x}{2}$ **52** $y = \frac{2}{3}x - 5$ **53** $y = -2x^2$ **54** $y = x^2 + 2$

55 $y = 4$ **56** $y = -6$ **57** $y = x^3$ **58** $y = \left(\frac{x}{2}\right)^3$

59. Graph a function with a domain of $-3 \le x \le 3$ and a range of $-5 \le y \le 5$.

60. Graph a function with a domain of $-2 \le x \le 5$ and a range of $0 \le y \le 4$.

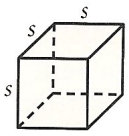
CHALLENGE

Given $f(t) = t^2 - 3$, find the indicated function value.

61. $f(\sqrt{2})$ **62.** $f(\sqrt{2} - 1)$ **63.** $f(a + \sqrt{2})$

CONNECTION

GEOMETRY The cube shown has volume V.



64. Express the volume of the cube as a function of s, the length of each side.

65. If the volume of the cube is 27 cubic meters, find the area of one face of the cube.

APPLICATIONS

66. CONSUMER ECONOMICS Computer equipment can depreciate very rapidly. Suppose a business assumes that a computer will depreciate linearly at a rate of 15% of its original price each year.

a. If a computer is purchased for $3200, write an equation in which the value for the computer is a function of its age in years.

b. Find the value of a computer after 3 years.

CONSUMER ECONOMICS A clothing store is selling all out-of-season clothing at 30% off the original price.

67. Write a function that gives the discounted price as a function of the original price.

68. Jason spent $47.25 on out-of-season items. Find the original cost of the items.

69. Helena purchased out-of-season items that originally cost $52. Find the sale price of these items.