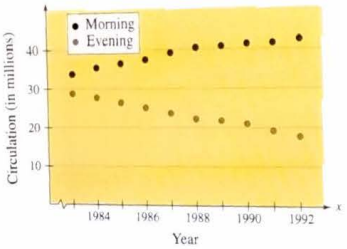
In Exercises 9 and 10, which sets of ordered pairs represent function(s) from A to B? Explain.

9. $A = \{0, 1, 2, 3\}$ and $B = \{-2, -1, 0, 1, 2\}$
   (a) $\{(0, 1), (1, -2), (2, 0), (3, 2)\}$
   (b) $\{(0, -1), (2, 2), (1, -2), (3, 0), (1, 1)\}$
   (c) $\{(0, 0), (1, 0), (2, 0), (3, 0)\}$
   (d) $\{(0, 2), (3, 0), (1, 1)\}$
10. $A = \{a, b, c\}$ and $B = \{0, 1, 2, 3\}$
   (a) $\{(a, 1), (c, 2), (c, 3), (b, 3)\}$
   (b) $\{(a, 1), (b, 2), (c, 3)\}$
   (c) $\{(1, a), (0, a), (2, c), (3, b)\}$
   (d) $\{(c, 0), (b, 0), (a, 3)\}$

Circulation of Newspapers **In Exercises 11 and 12, use the graph, which shows the circulation (in millions) of daily newspapers in the United States.** (Source: Editor & Publisher Company)



11. Is the circulation of morning newspapers a function of the year? Is the circulation of evening newspapers a function of the year? Explain.
12. Let $f(x)$ represent the circulation of evening newspapers in year x. Find $f(1988)$.

In Exercises 13–22, determine if the equation represents y as a function of x.

13. $x^2 + y^2 = 4$
14. $x = y^2$
15. $x^2 + y = 4$
16. $x + y^2 = 4$
17. $2x + 3y = 4$
18. $(x - 2)^2 + y^2 = 4$
19. $y^2 = x^2 - 1$
20. $y = \sqrt{x + 5}$
21. $y = |4 - x|$
22. $|y| = 4 - x$

In Exercises 23 and 24, fill in the blanks using the specified function and the given values of the independent variable.

23. $f(s) = \dfrac{1}{s + 1}$
   (a) $f(4) = \dfrac{1}{(\quad) + 1}$
   (b) $f(0) = \dfrac{1}{(\quad) + 1}$
   (c) $f(4x) = \dfrac{1}{(\quad) + 1}$
   (d) $f(x + c) = \dfrac{1}{(\quad) + 1}$
24. $g(x) = x^2 - 2x$
   (a) $g(2) = (\quad)^2 - 2(\quad)$
   (b) $g(-3) = (\quad)^2 - 2(\quad)$
   (c) $g(t + 1) = (\quad)^2 - 2(\quad)$
   (d) $g(x + c) = (\quad)^2 - 2(\quad)$

In Exercises 25–36, evaluate the function at the specified values of the independent variable and simplify.

25. $f(x) = 2x - 3$
   (a) $f(1)$ (b) $f(-3)$ (c) $f(x - 1)$
26. $g(y) = 7 - 3y$
   (a) $g(0)$ (b) $g\left(\frac{7}{3}\right)$ (c) $g(s + 2)$
27. $h(t) = t^2 - 2t$
   (a) $h(2)$ (b) $h(1.5)$ (c) $h(x + 2)$
28. $V(r) = \frac{4}{3}\pi r^3$
   (a) $V(3)$ (b) $V\left(\frac{3}{2}\right)$ (c) $V(2r)$
29. $f(y) = 3 - \sqrt{y}$
   (a) $f(4)$ (b) $f(0.25)$ (c) $f(4x^2)$
30. $f(x) = \sqrt{x + 8} + 2$
   (a) $f(-8)$ (b) $f(1)$ (c) $f(x - 8)$
31. $q(x) = \dfrac{1}{x^2 - 9}$
   (a) $q(0)$ (b) $q(3)$ (c) $q(y + 3)$
32. $q(t) = \dfrac{2t^2 + 3}{t^2}$
   (a) $q(2)$ (b) $q(0)$ (c) $q(-x)$
33. $f(x) = \dfrac{|x|}{x}$
   (a) $f(2)$ (b) $f(-2)$ (c) $f(x - 1)$
34. $f(x) = |x| + 4$
   (a) $f(2)$ (b) $f(-2)$ (c) $f(x^2)$
35. $f(x) = \begin{cases} 2x + 1, & x < 0 \\ 2x + 2, & x \geq 0 \end{cases}$
   (a) $f(-1)$ (b) $f(0)$ (c) $f(2)$
36. $f(x) = \begin{cases} x^2 + 2, & x \leq 1 \\ 2x^2 + 2, & x > 1 \end{cases}$
   (a) $f(-2)$ (b) $f(1)$ (c) $f(2)$

In Exercises 37–42, complete the table.

37. $f(x) = x^2 - 3$

x	-2	-1	0	1	2
$f(x)$					

38. $g(x) = \sqrt{x - 3}$

x	3	4	5	6	7
$g(x)$					

39. $h(t) = \frac{1}{2}|t + 3|$

t	-5	-4	-3	-2	-1
$h(t)$					

40. $f(s) = \dfrac{|s - 2|}{s - 2}$

s	0	1	$\frac{3}{2}$	$\frac{5}{2}$	4
$f(s)$					

41. $f(x) = \begin{cases} -\frac{1}{2}x + 4, & x \leq 0 \\ (x - 2)^2, & x > 0 \end{cases}$

x	-2	-1	0	1	2
$f(x)$					

42. $h(x) = \begin{cases} 9 - x^2, & x < 3 \\ x - 3, & x \geq 3 \end{cases}$

x	1	2	3	4	5
$h(x)$					

In Exercises 43–46, find all real values of x such that $f(x) = 0$.

43. $f(x) = 15 - 3x$
44. $f(x) = \dfrac{3x - 4}{5}$
45. $f(x) = x^2 - 9$
46. $f(x) = x^3 - x$

In Exercises 47–50, find the value(s) of x for which $f(x) = g(x)$.

47. $f(x) = x^2, \quad g(x) = x + 2$
48. $f(x) = x^2 + 2x + 1, \quad g(x) = 3x + 3$
49. $f(x) = \sqrt{3x} + 1, \quad g(x) = x + 1$
50. $f(x) = x^4 - 2x^2, \quad g(x) = 2x^2$

In Exercises 51–60, find the domain of the function.

51. $f(x) = 5x^2 + 2x - 1$
52. $g(x) = 1 - 2x^2$
53. $h(t) = \dfrac{4}{t}$
54. $s(y) = \dfrac{3y}{y + 5}$
55. $g(y) = \sqrt{y - 10}$
56. $f(t) = \sqrt[3]{t + 4}$
57. $f(x) = \sqrt[4]{1 - x^2}$
58. $h(x) = \dfrac{10}{x^2 - 2x}$
59. $g(x) = \dfrac{1}{x} - \dfrac{3}{x + 2}$
60. $f(s) = \dfrac{\sqrt{s - 1}}{s - 4}$