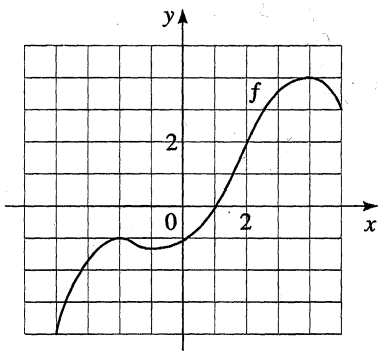
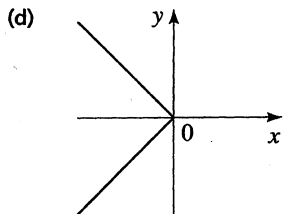
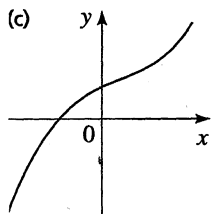
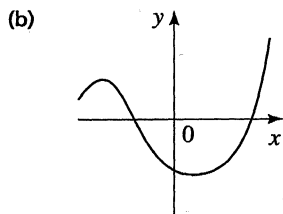
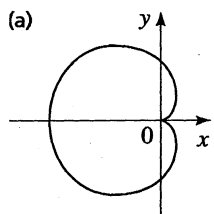


- If $f(x) = x^2 - x + 1$, find $f(0)$, $f(2)$, $f(-2)$, $f(a)$, $f(-a)$, $f(x+1)$, $f(2x)$, and $2f(x) - 2$.
- If $f(x) = 1 + \sqrt{x-1}$, find $f(5)$, $f(9)$, $f(a+1)$, $f(-x)$, $f(x^2)$, and $[f(x)]^2$.
- The graph of a function is given.
 - Find $f(-2)$ and $f(2)$.
 - Find the domain of f .
 - Find the range of f .
 - On what intervals is f increasing? On what intervals is f decreasing?
 - Is f one-to-one?



- Which of the following figures are graphs of functions? Which of the functions are one-to-one?

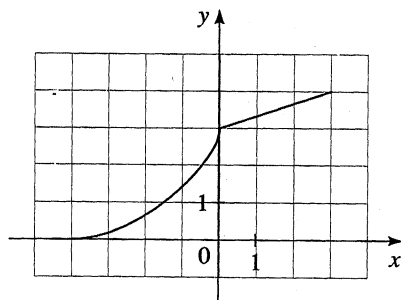


15–32 ■ Sketch the graph of the function.

- $f(x) = 1 - 2x$
- $f(x) = \frac{1}{3}(x - 5)$, $2 \leq x \leq 8$
- $f(t) = 1 - \frac{1}{2}t^2$
- $g(t) = t^2 - 2t$
- $f(x) = x^2 - 6x + 6$
- $f(x) = 3 - 8x - 2x^2$
- $y = 1 - \sqrt{x}$
- $y = -|x|$
- $y = \frac{1}{2}x^3$
- $y = \sqrt{x+3}$
- $h(x) = \sqrt[3]{x}$
- $H(x) = x^3 - 3x^2$
- $g(x) = \frac{1}{x^2}$
- $G(x) = \frac{1}{(x-3)^2}$
- $f(x) = \begin{cases} 1-x & \text{if } x < 0 \\ 1 & \text{if } x \geq 0 \end{cases}$
- $f(x) = \begin{cases} 1-2x & \text{if } x \leq 0 \\ 2x-1 & \text{if } x > 0 \end{cases}$
- $f(x) = \begin{cases} x+6 & \text{if } x < -2 \\ x^2 & \text{if } x \geq -2 \end{cases}$
- $f(x) = \begin{cases} -x & \text{if } x < 0 \\ x^2 & \text{if } 0 \leq x < 2 \\ 1 & \text{if } x \geq 2 \end{cases}$

54. The graph of f is given. Draw the graphs of the following functions.

- $y = f(x-2)$
- $y = -f(x)$
- $y = 3 - f(x)$
- $y = \frac{1}{2}f(x) - 1$
- $y = f^{-1}(x)$
- $y = f(-x)$



- Find the minimum value of the function $g(x) = 2x^2 + 4x - 5$.
- Find the maximum value of the function $f(x) = 1 - x - x^2$.

61. A stone is thrown upward from the top of a building. Its height (in feet) above the ground after t seconds is given by $h(t) = -16t^2 + 48t + 32$. What maximum height does it reach?

62. The profit P (in dollars) generated by selling x units of a certain commodity is given by

$$P(x) = -1500 + 12x - 0.0004x^2$$

What is the maximum profit, and how many units must be sold to generate it?

65. If $f(x) = x^2 - 3x + 2$ and $g(x) = 4 - 3x$, find the following functions.

- $f + g$
- $f - g$
- fg
- f/g
- $f \circ g$
- $g \circ f$

66. If $f(x) = 1 + x^2$ and $g(x) = \sqrt{x-1}$, find the following functions.

- $f \circ g$
- $g \circ f$
- $(f \circ g)(2)$
- $(f \circ f)(2)$
- $f \circ g \circ f$
- $g \circ f \circ g$

69. Find $f \circ g \circ h$, where $f(x) = \sqrt{1-x}$, $g(x) = 1 - x^2$, and $h(x) = 1 + \sqrt{x}$.

70. If $T(x) = \frac{1}{\sqrt{1+\sqrt{x}}}$, find functions f , g , and h such that $f \circ g \circ h = T$.

71–76 ■ Determine whether the function is one-to-one.

- $f(x) = 3 + x^3$
- $g(x) = 2 - 2x + x^2$
- $h(x) = \frac{1}{x^4}$
- $r(x) = 2 + \sqrt{x+3}$

77–80 ■ Find the inverse of the function.

- $f(x) = 3x - 2$
- $f(x) = \frac{2x+1}{3}$
- $f(x) = (x+1)^3$
- $f(x) = 1 + \sqrt[3]{x-2}$

81. (a) Sketch the graph of the function

$$f(x) = x^2 - 4, \quad x \geq 0$$

- Use part (a) to sketch the graph of f^{-1} .
- Find an equation for f^{-1} .