

64.  $f(x) = x^{2/3}(6-x)^{1/3}$

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

- (a)  $f + g$                       (b)  $f - g$                       (c)  $fg$   
 (d)  $f/g$                         (e)  $f \circ g$                       (f)  $g \circ f$

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

- (a)  $f \circ g$                                       (b)  $g \circ f$                       (c)  $(f \circ g)(2)$   
 (d)  $(f \circ f)(2)$                                 (e)  $f \circ g \circ f$                       (f)  $g \circ f \circ g$

67–68 ■ Find the functions  $f \circ g$ ,  $g \circ f$ ,  $f \circ f$ , and  $g \circ g$  and their domains.

67.  $f(x) = 3x - 1$ ,  $g(x) = 2x - x^2$

68.  $f(x) = \sqrt{x}$ ,  $g(x) = \frac{2}{x-4}$

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.

71.  $f(x) = 3 + x^3$

72.  $g(x) = 2 - 2x + x^2$

73.  $h(x) = \frac{1}{x^4}$

74.  $r(x) = 2 + \sqrt{x+3}$

75.  $p(x) = 3.3 + 1.6x - 2.5x^3$

76.  $q(x) = 3.3 + 1.6x + 2.5x^3$

77–80 ■ Find the inverse of the function.

77.  $f(x) = 3x - 2$

78.  $f(x) = \frac{2x+1}{3}$

79.  $f(x) = (x+1)^3$

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

81. (a) Sketch the graph of the function

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

(b) Use part (a) to sketch the graph of  $f^{-1}$ .(c) Find an equation for  $f^{-1}$ .82. (a) Show that the function  $f(x) = 1 + \sqrt[3]{x}$  is one-to-one.(b) Sketch the graph of  $f$ .(c) Use part (b) to sketch the graph of  $f^{-1}$ .(d) Find an equation for  $f^{-1}$ .