

## 5.7 Extra Practice

In Exercises 1–3, solve  $y = f(x)$  for  $x$ . Then find the input(s) when the output is  $-3$ .

1.  $f(x) = -\frac{4}{3}x + 2$       2.  $f(x) = 25x^4$       3.  $f(x) = (x - 3)^2 - 4$

In Exercises 4–6, find the inverse of the function. Then graph the function and its inverse.

4.  $f(x) = -3x + 4$       5.  $f(x) = -\frac{1}{3}x + 1$       6.  $f(x) = \frac{2}{5}x - \frac{1}{5}$

7. Describe and correct the error in finding the inverse of the function.

✗  $f(x) = 3x - 8$   
 $y = 3x - 8$   
 $x = 3y - 8$   
 $f^{-1}(x) = 3x - 8$

In Exercises 8–10, find the inverse of the function. Then graph the function and its inverse.

8.  $f(x) = -9x^2, x \leq 0$       9.  $f(x) = (x - 1)^3$       10.  $f(x) = x^6, x \leq 0$

In Exercises 11–14, determine whether the functions are inverse functions.

11.  $f(x) = 6x + 1; g(x) = 6x - 1$       12.  $f(x) = \frac{\sqrt[3]{x-6}}{2}; g(x) = 8x^3 + 6$

13.  $f(x) = \frac{5-x}{2}; g(x) = 5 - 2x$       14.  $f(x) = 4x^2 + 3; g(x) = -\frac{x-3}{4}$

15. Find the inverse of the function  $f(x) = 8x^3$  by switching the roles of  $x$  and  $y$  and solving for  $y$ . Then find the inverse of the function  $f$  by using inverse operations in the reverse order. Which method do you prefer? Explain.

16. The volume of a sphere is given by  $V = \frac{4}{3}\pi r^3$ , where  $r$  is the radius.

- Find the inverse function. Describe what it represents.
- Find the radius of a sphere with a volume of 146 cubic meters.