

## 1.2

## Practice A

In Exercises 1–4, write a function  $g$  whose graph represents the indicated transformation of the graph of  $f$ . Use a graphing calculator to check your answer.

- $f(x) = x - 2$ ; translation 5 units left  $g(x) = x + 3$
- $f(x) = x + 1$ ; translation 4 units right  $g(x) = x - 3$
- $f(x) = |3x + 2| + 4$ ; translation 3 units down  $g(x) = |3x + 2| + 1$
- $f(x) = 4x - 5$ ; translation 3 units up  $g(x) = 4x - 2$

In Exercises 5–8, write a function  $g$  whose graph represents the indicated transformation of the graph of  $f$ . Use a graphing calculator to check your answer.

- $f(x) = -3x + 7$ ; reflection in the  $x$ -axis  $g(x) = 3x - 7$
- $f(x) = \frac{1}{3}x - 2$ ; reflection in the  $x$ -axis  $g(x) = -\frac{1}{3}x + 2$
- $f(x) = |4x| - 6$ ; reflection in the  $y$ -axis  $g(x) = |-4x| - 6$
- $f(x) = |3x - 5| + 3$ ; reflection in the  $y$ -axis  $g(x) = |-3x - 5| + 3$

In Exercises 9–12, write a function  $g$  whose graph represents the indicated transformation of the graph of  $f$ . Use a graphing calculator to check your answer.

- $f(x) = x + 3$ ; vertical stretch by a factor of 4  $g(x) = 4x + 12$
- $f(x) = 4x + 3$ ; vertical shrink by a factor of  $\frac{1}{3}$   $g(x) = \frac{4}{3}x + 1$
- $f(x) = |3x| + 2$ ; horizontal shrink by a factor of  $\frac{1}{3}$   $g(x) = |9x| + 2$
- $f(x) = |x + 1|$ ; horizontal stretch by a factor of 3  $g(x) = |\frac{1}{3}x + 1|$

In Exercises 13 and 14, write a function  $g$  whose graph represents the indicated transformation of the graph of  $f$ .

- $f(x) = x$ ; vertical shrink by a factor of  $\frac{1}{3}$  followed by a translation 4 units down  $g(x) = \frac{1}{3}x - 4$
- $f(x) = |x|$ ; translation 3 units left followed by a horizontal shrink by a factor of  $\frac{1}{2}$   $g(x) = |2x + 3|$