

**7-1 Skills Practice****Operations on Functions**

Find  $(f + g)(x)$ ,  $(f - g)(x)$ ,  $(f \cdot g)(x)$ , and  $\left(\frac{f}{g}\right)(x)$  for each  $f(x)$  and  $g(x)$ .

1.  $f(x) = x + 5$

$g(x) = x - 4$

2.  $f(x) = 3x + 1$

$g(x) = 2x - 3$

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

$g(x) = 4 - x$

4.  $f(x) = 3x^2$

$g(x) = \frac{5}{x}$

For each pair of functions, find  $f \circ g$  and  $g \circ f$  if they exist.

5.  $f = \{(0, 0), (4, -2)\}$   
 $g = \{(0, 4), (-2, 0), (5, 0)\}$

6.  $f = \{(0, -3), (1, 2), (2, 2)\}$   
 $g = \{(-3, 1), (2, 0)\}$

7.  $f = \{(-4, 3), (-1, 1), (2, 2)\}$   
 $g = \{(1, -4), (2, -1), (3, -1)\}$

8.  $f = \{(6, 6), (-3, -3), (1, 3)\}$   
 $g = \{(-3, 6), (3, 6), (6, -3)\}$

Find  $[g \circ h](x)$  and  $[h \circ g](x)$  if they exist.

9.  $g(x) = 2x$   
 $h(x) = x + 2$

10.  $g(x) = -3x$   
 $h(x) = 4x - 1$

11.  $g(x) = x - 6$   
 $h(x) = x + 6$

12.  $g(x) = x - 3$   
 $h(x) = x^2$

13.  $g(x) = 5x$   
 $h(x) = x^2 + x - 1$

14.  $g(x) = x + 2$   
 $h(x) = 2x^2 - 3$

If  $f(x) = 3x$ ,  $g(x) = x + 4$ , and  $h(x) = x^2 - 1$ , find each value.

15.  $f[g(1)]$

16.  $g[h(0)]$

17.  $g[f(-1)]$

18.  $h[f(5)]$

19.  $g[h(-3)]$

20.  $h[f(10)]$

21.  $f[h(8)]$

22.  $[f \circ (h \circ g)](1)$

23.  $[f \circ (g \circ h)](-2)$