

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 set of ordered pairs, 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 $[h \circ g](x)$.

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