

7-7

Practice

Operations on Functions

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

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

$g(x) = x - 3$

1) $3x - 2$

2) $x + 4$

3) $2x^2 - 5x - 3$

4) $\frac{2x+1}{x-3}, x \neq 3$

2. $f(x) = 8x^2$

$g(x) = \frac{1}{x^2}$

1) $8x^2 + \frac{1}{x^2}$ or

$\frac{8x^4+1}{x^2}, x \neq 0$

2) $\frac{8x^4-1}{x^2}$ or $8x^2 - \frac{1}{x^2}$

$x \neq 0$

3) $8; x \neq 0$

4) $8x^4; x \neq 0$

3. $f(x) = x^2 + 7x + 12$

$g(x) = x^2 - 9$

1) $2x^2 + 7x + 3$

2) $7x + 21$

3) $x^4 + 7x^3 + 3x^2 - 63x - 108$

4) $\frac{x+4}{x-3}, x \neq \pm 3$

Find $(g \circ h)(x)$ and $(h \circ g)(x)$.

8. $g(x) = 3x$

$h(x) = x - 4$

1) $3x - 12$

2) $3x - 4$

11. $g(x) = x + 3$

$h(x) = 2x^2$

1) $2x^2 + 3$

2) $2x^2 + 12x + 18$

If $f(x) = x^2$, $g(x) = 5x$, and $h(x) = x + 4$, find each value.

14. $f[g(1)]$ 25

17. $f[h(-9)]$ 25

20. $h[f(20)]$ 404

9. $g(x) = -8x$

$h(x) = 2x + 3$

1) $-16x - 24$

2) $-16x + 3$

12. $g(x) = -2x$

$h(x) = x^2 + 3x + 2$

1) $-2x^2 - 6x - 4$

2) $4x^2 - 6x + 2$

10. $g(x) = x + 6$

$h(x) = 3x^2$

1) $3x^2 + 6$

2) $3x^2 + 36x + 108$

13. $g(x) = x - 2$

$h(x) = 3x^2 + 1$

1) $3x^2 - 1$

2) $3x^2 - 12x + 13$

16. $h[f(4)]$ 20

19. $g[f(8)]$ 320

22. $[f \circ (g \circ h)](4)$ 1600