

Section 10.2 Extra Practice

1. For each pair of functions, determine

$$h(x) = f(x)g(x).$$

a) $f(x) = x + 3$ $g(x) = 2x - 5$

b) $f(x) = 2x - 3$ $g(x) = 3x + 1$

c) $f(x) = \sqrt{x - 4}$ $g(x) = x + 2$

d) $f(x) = \sqrt{x + 1}$ $g(x) = \sqrt{3 - x}$

2. Consider the functions $f(x) = x - 4$ and

$$g(x) = x + 4.$$

- a) Determine the equation of $h(x) = (f \cdot g)(x)$.

- b) Sketch the graphs of $f(x)$, $g(x)$, and $h(x)$ on the same grid.

- c) State the domain and range of $h(x)$.

3. Determine $h(x) = \frac{f(x)}{g(x)}$, and then state the domain and range of $h(x)$.

a) $f(x) = x + 3$ $g(x) = 2x - 5$

b) $f(x) = 2x - 3$ $g(x) = 3x + 1$

c) $f(x) = \sqrt{x - 4}$ $g(x) = x + 2$

d) $f(x) = \sqrt{x + 1}$ $g(x) = \sqrt{3 - x}$

4. Consider the functions $f(x) = x^2 - 9$ and $g(x) = x - 3$.

- a) Determine the equation of the function

$$h(x) = \frac{f(x)}{g(x)}.$$

- b) Sketch the graphs of $f(x)$, $g(x)$, and $h(x)$ on the same grid.

- c) State the domain and range of $h(x)$.

5. Given $f(x) = x + 1$, $g(x) = 2x + 1$, and $h(x) = 2x^2 + 7x + 3$, determine each combined function and state its domain and range.

a) $y = (f \cdot g)(x)$ **b)** $y = (f \cdot h)(x)$

c) $y = \frac{g(x)}{f(x)}$ **d)** $y = \frac{h(x)}{g(x)}$

6. For each pair of functions $f(x)$ and $g(x)$,

- determine $h(x) = (f \cdot g)(x)$

- sketch the graphs of $f(x)$, $g(x)$, and $h(x)$ on the same grid

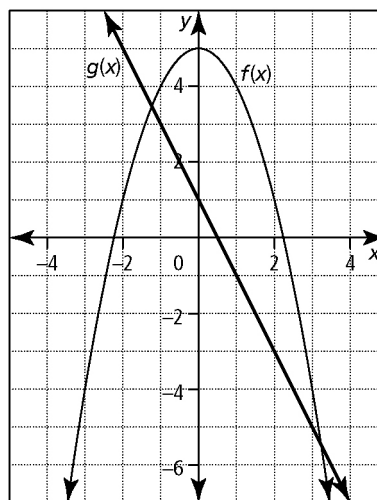
- state the domain and range of $h(x)$

a) $f(x) = x^2 + 4x + 3$ $g(x) = x - 5$

b) $f(x) = x - 4$ $g(x) = x^2 - 16$

c) $f(x) = \frac{1}{x - 3}$ $g(x) = \frac{1}{x + 1}$

7. Use the graphs of $f(x) = -x^2 + 5$ and $g(x) = -2x + 1$ to determine each value.



a) $(f \cdot g)(-1)$ **b)** $(f \cdot g)(2)$

c) $\left(\frac{f}{g}\right)(1)$ **d)** $\left(\frac{f}{g}\right)(3)$

e) $\left(\frac{g}{f}\right)(0)$ **f)** $\left(\frac{g}{f}\right)(-2)$

8. For each pair of functions $f(x)$ and $g(x)$,

- determine $h(x) = \frac{f(x)}{g(x)}$

- sketch the graphs of $f(x)$, $g(x)$, and $h(x)$ on the same grid

- state the domain and range of $h(x)$

a) $f(x) = x^2 + 6x + 8$ $g(x) = x + 4$

b) $f(x) = \frac{1}{x + 2}$ $g(x) = \frac{1}{x - 6}$

9. If $h(x) = \frac{f(x)}{g(x)}$ and $f(x) = x^3 + 6x^2 + 11x + 6$, determine $g(x)$.

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

b) $h(x) = x^2 + 4x + 3$

10. Given $f(x) = x + 1$, $g(x) = x - 5$, and $h(x) = x - 4$, determine each combined function.

a) $y = f(x)g(x)h(x)$

b) $y = \frac{f(x)g(x)}{h(x)}$

c) $y = \frac{f(x) + g(x)}{h(x)}$

