

Section 10.1 Extra Practice

1. For each pair of functions, determine $h(x) = f(x) + g(x)$.

a) $f(x) = \sqrt{x-4}$ $g(x) = 12$
 b) $f(x) = 2x + 7$ $g(x) = 5x - 11$
 c) $f(x) = x^2 - 3x - 2$ $g(x) = x^2 - x + 5$
 d) $f(x) = (x+4)^2$ $g(x) = -7x + 1$

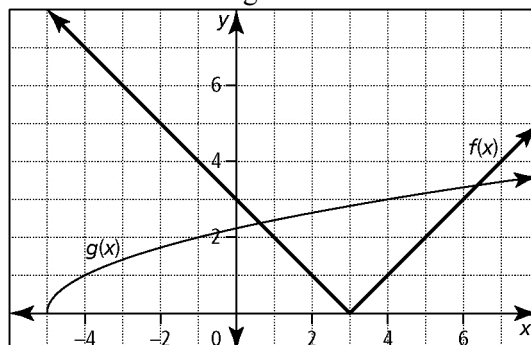
2. Consider the functions $f(x) = 3x - 5$ and $g(x) = x^2 + 1$.
- Determine the equation of the function $h(x) = (f + g)(x)$.
 - Sketch the graphs of $f(x)$, $g(x)$, and $h(x)$ on the same set of axes.
 - State the domain and range of $h(x)$.

3. For each pair of functions, determine $h(x) = f(x) - g(x)$.

a) $f(x) = 10$ $g(x) = |x + 3|$
 b) $f(x) = 2x - 5$ $g(x) = x + 8$
 c) $f(x) = x^2 + x + 8$ $g(x) = 2x^2 - 3x$
 d) $f(x) = 4x - 6$ $g(x) = (x - 2)^2$

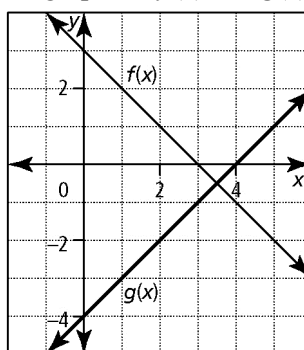
4. Consider the functions $f(x) = (x + 1)^2$ and $g(x) = 3x$.
- Determine the equation of the function $h(x) = (f - g)(x)$.
 - Sketch the graphs of $f(x)$, $g(x)$, and $h(x)$ on the same set of axes.
 - State the domain and range of $h(x)$.
5. Given $f(x) = x^2 - 6$, $g(x) = \sqrt{x-2}$, and $h(x) = 2x - 1$, find each combined function and state its domain and range.
- $y = (f + g)(x)$
 - $y = (g - h)(x)$
 - $y = (h - g)(x)$
 - $y = (f + h)(x)$
6. Consider $f(x) = x^2 - 7$ and $g(x) = 4x + 5$.
- Determine $h(x) = f(x) + g(x)$, and then find $h(2)$.
 - Determine $m(x) = f(x) - g(x)$, and then find $m(1)$.
 - Determine $p(x) = g(x) + f(x)$, and then find $p(1)$.

7. Use the graphs of $f(x)$ and $g(x)$ to evaluate each of the following.



a) $(f + g)(4)$ b) $(f + g)(-1)$
 c) $(f + g)(-4)$ d) $(f + g)(-5)$

8. Sketch the graph of $h(x) = (f - g)(x)$ given the graphs of $f(x)$ and $g(x)$.



9. If $h(x) = (f + g)(x)$ and $f(x) = 3x - 4$, determine $g(x)$.

a) $h(x) = x^2 + 5x - 2$ b) $h(x) = \sqrt{x-7} + 1$
 c) $h(x) = \frac{9x+15}{3}$ d) $h(x) = 2x^2 - 7x + 4$

10. The cost to rent a facility for an event is \$2500 plus \$14 per person. Tickets to the event cost \$65.
- Write equations to represent the total cost, C , and the total revenue, R , as functions of the number, n , of people.
 - Graph $C(n)$ and $R(n)$ on the same set of axes.
 - How many people must attend for the organizers of the event to break even?



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

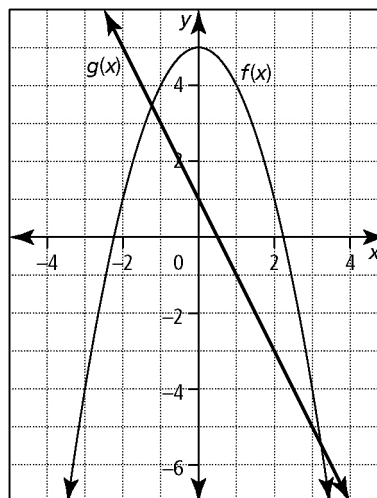
6. For each pair of functions $f(x)$ and $g(x)$,
- determine $h(x) = (f \cdot g)(x)$
 - sketch the graphs of $f(x)$, $g(x)$, and $h(x)$ on the same grid
 - state the domain and range of $h(x)$

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

