

Section 10.3 Extra Practice

1. Given $f(x) = 3x - 5$ and $g(x) = -2x + 7$, find each value.

a) $f(g(1))$ b) $f(g(-4))$
c) $g(f(-2))$ d) $g(f(3))$

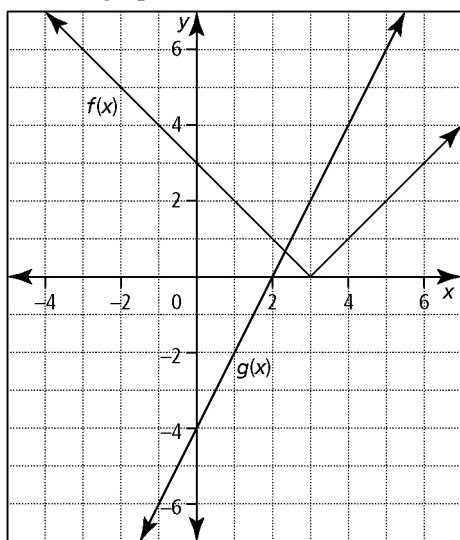
2. Given $f(x) = 8 - 2x$ and $g(x) = x^2 + 3x + 4$, find each value.

a) $f(g(1))$ b) $f(g(-4))$
c) $g(f(-2))$ d) $g(f(3))$

3. Given $f(-1) = 7$, $f(7) = 5$, $f(3) = 0$, $g(-1) = 3$, $g(7) = -1$, and $g(5) = -2$, find each value.

a) $f(g(7))$ b) $f(g(-1))$
c) $g(f(-1))$ d) $g(f(7))$

4. Use the graph to find each value.



a) $g(f(-1))$ b) $g(f(-2))$
c) $f(g(1))$ d) $f(g(2))$

5. If $f(x) = 2x - 9$ and $g(x) = x^2 + 6$, determine each of the following.

a) $f(g(a))$ b) $g(f(a))$
c) $f(g(x))$ d) $g(f(x))$
e) $f(f(x))$ f) $g(g(x))$

6. Consider $f(x) = x^2 - 5$ and $g(x) = \sqrt{x + 2}$.

a) Determine $y = f(g(x))$.
b) Sketch the graph of $y = f(g(x))$.
c) State the domain and range of $y = f(g(x))$.

7. Given $f(x) = \sqrt{x + 2}$ and $g(x) = x + 5$, sketch the graph of each composite function. Then, determine the domain and range of each composite function.

a) $f(g(x))$
b) $g(f(x))$

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

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

9. If $h(x) = (f \circ g)(x)$, determine $g(x)$.

a) $h(x) = x - 4$ and $f(x) = x^2$
b) $h(x) = x^2 + 6x + 5$ and $f(x) = x^2 - 4$

10. A manufacturer's weekly production of office chairs can be modelled by the function $N(t) = 100 + 25t$, where t is the time in years since 2001, and N is the number of chairs. The size of the manufacturer's workforce can be modelled by the composite function $W(N) = 3\sqrt{N}$.
- a) Write an equation that represents the size of the workforce as a function of time.
- b) Determine the domain and range of the function from part a).
- c) What was the size of the workforce in 2011? How many office chairs were manufactured in that year?

