

Answer Key

7.6

Let $f(x) = 4x$ and $g(x) = x^2 + 5x$. Perform each function operation. Then find the domain of each.

1. $f(x) \cdot g(x) = 4x \cdot (x^2 + 5x) = \boxed{4x^3 + 20x^2}$

2. $\frac{g(x)}{f(x)} = \frac{x^2 + 5x}{4x} = \frac{x(x+5)}{4x} = \boxed{\frac{x+5}{4}}$

3. $3g(x) - 2f(x)$

$3(x^2 + 5x) - 2(4x) = 3x^2 + 15x - 8x = \boxed{3x^2 + 7x}$

4. $f(x) + g(x) = 4x + x^2 + 5x = \boxed{x^2 + 9x}$

Let $f(x) = -3x + 2$, $g(x) = 2x - 1$, and $j(x) = 5 - x$. Find each value or expression.

5. $(f \circ g)(-5) = f(g(-5)) = 35$

$g(-5) = 2(-5) - 1 = -10 - 1 = -11$

$f(-11) = -3(-11) + 2 = \boxed{35}$

6. $(g \circ j)(2) = g(j(2)) = 5$

$j(2) = 5 - 2 = 3$ $g(3) = 2 \cdot 3 - 1 = 5$

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

$= -6x + 4 - 1 = \boxed{-6x + 3}$

8. $f(g(a)) = -3(5 - a) + 2 = -15 + 3a + 2$

$g(a) = 5 - a$ $= \boxed{-13 + 3a}$

9. A boat travels at a constant speed of 56 miles per hour in still water. During a particular portion of the journey, the speed of the current is 15 miles per hour in the same direction the boat is traveling.

a. Write a function $f(x)$ for the distance traveled by the boat in still water for x hours.

b. Write a function $g(x)$ for the effect of the current on the boat for x hours.

c. Write an expression for the total speed of the boat traveling with the current.

7.7

10. Graph the relation and its inverse. Use open circles to graph the points of the inverse.

x	1	4	5	7
y	3	-2	2	-1

x	3	-2	2	-1
y^{-1}	1	4	5	7

