Name KEY Algebra 2 Practice Quiz (6.3-6.4)

Let $f(x) = 5x^2$ and $g(x) = 3x^2$. Perform the indicated operation and state the domain.

1. $f(x) + g(x)$

$5x^2 + 3x^2$

$8x^2$

D: all Real #'s

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

$5x^2 - 3x^2$

$2x^2$

D: All real #'s

3. $f(x) \cdot g(x)$

$(5x^2)(3x^2)$

$15x^4$

D: All real #'s

4. $\frac{f(x)}{g(x)}$

$\frac{5x^2}{3x^2} = \frac{5}{3}$

D: All real, $x \neq 0$

5. $f(g(x))$

$5(3x^2)^2$

$5(9x^4)$

$45x^4$

D: All real #'s

5. $g(f(x))$

$3(5x^2)^2$

$3(25x^4)$

$75x^4$

D: All real #'s

Verify that f and g are inverse functions.

7. $f(x) = x - 7$; $g(x) = x + 7$

$f(g(x)) = (x+7) - 7$

$= x$

$g(f(x)) = (x-7) + 7$

$= x$

8. $f(x) = 6x^3$; $g(x) = \sqrt[3]{\frac{x}{6}}$

$f(g(x)) = 6\left(\sqrt[3]{\frac{x}{6}}\right)^3$

$= 6\left(\frac{x}{6}\right) = x$

$g(f(x)) = \sqrt[3]{\frac{6x^3}{6}} = \sqrt[3]{x^3} = x$

Find the inverse of the function.

9. $f(x) = 3x + 10$

$y = 3x + 10$

$x = 3y + 10$

$x - 10 = 3y$

$\frac{x-10}{3} = y$

10. $f(x) = -\frac{3}{8}x^7$

$y = -\frac{3}{8}x^7$

$x = -\frac{3}{8}y^7$

$-\frac{8}{3}x = y^7$

$\sqrt[7]{-\frac{8}{3}x} = y$

11. $f(x) = x^2 - 9,\ x \geq -9$

$y = x^2 - 9$

$x = y^2 - 9$

$x + 9 = y^2$

$\sqrt{x+9} = y$

12. The cost (in dollars) of g gallons of gasoline can be modeled by $C(g) = 3.15g$. The amount of gasoline used by an SUV can be modeled by $g(d) = 0.025d^{1.24}$ where d is the distance (in miles). Find $C(g(d))$. Evaluate $C(g(500))$. What does $C(g(500))$ represent?

* $C(g(d)) = 3.15\ (0.025d^{1.24})$

$= 0.07875\,d^{1.24}$

* $C(g(500)) = 0.07875\ (500)^{1.24}$

$= 0.07875\ (2221.89)$

$= \$174.97$

* C(g(500)) Represents the cost to travel 500 miles.