

Math Sheet

Name _____ Score _____ / 10 Teacher _____ Date _____

Function Operations and Composition

Apply each operation at the given argument. Simplify exactly and state quotient restrictions.

1. $p(x) = -11x - 5$
 $h(x) = x^2 - 8x + 7$
 $(p + h)(-9)$

2. $h(x) = x^3 - 5x$
 $g(x) = 7x + 5$
 $(g \cdot h)(11)$

3. $g(x) = 7x^2 + 4$
 $p(x) = 6x + 1$
 $(g - p)(5)$

4. $p(x) = x^2 + 8x - 4$
 $h(x) = x^3 - 2x$
 $\left(\frac{h}{p}\right)(-10)$

5. $p(x) = -4x + 1$
 $f(x) = x^2 + 4x - 4$
 $(p + f)(y)$

6. $f(x) = x^3 + 9x$
 $p(x) = -8x^2 - 3$
 $(p - f)(y)$

7. $g(x) = -5x - 1$
 $h(x) = x^3 - 5x$
 $\left(\frac{g}{h}\right)(y)$

8. $p(x) = -4x^2 + 1$
 $g(x) = 5x + 10$
 $(g \cdot p)(y)$

9. $f(x) = 6x + 1$
 $g(x) = 2x + 11$
 $(f \circ g)(10)$

10. $f(x) = -10x + 8$
 $p(x) = x^2 - 10$
 $(p \circ f)(y + 9)$

Math Sheet

Name _____ Score _____ / 10 Teacher _____ Date _____

Function Operations and Composition

Answer Key

Apply each operation at the given argument. Simplify exactly and state quotient restrictions.

$$\begin{aligned}1. \quad & p(x) = -11x - 5 \\ & h(x) = x^2 - 8x + 7 \\ & (p + h)(-9) \\ & = (-11(-9) - 5) + ((-9)^2 - 8(-9) + 7) \\ & = 254\end{aligned}$$

$$\begin{aligned}2. \quad & h(x) = x^3 - 5x \\ & g(x) = 7x + 5 \\ & (g \cdot h)(11) \\ & = (7(11) + 5) \cdot ((11)^3 - 5(11)) \\ & = 104632\end{aligned}$$

$$\begin{aligned}3. \quad & g(x) = 7x^2 + 4 \\ & p(x) = 6x + 1 \\ & (g - p)(5) \\ & = (7(5)^2 + 4) - (6(5) + 1) \\ & = 148\end{aligned}$$

$$\begin{aligned}4. \quad & p(x) = x^2 + 8x - 4 \\ & h(x) = x^3 - 2x \\ & \left(\frac{h}{p}\right)(-10) \\ & = \frac{-980}{16} \\ & = \frac{-245}{4}\end{aligned}$$

$$\begin{aligned}5. \quad & p(x) = -4x + 1 \\ & f(x) = x^2 + 4x - 4 \\ & (p + f)(y) \\ & = (-4(y) + 1) + ((y)^2 + 4(y) - 4) \\ & = y^2 - 3\end{aligned}$$

$$\begin{aligned}6. \quad & f(x) = x^3 + 9x \\ & p(x) = -8x^2 - 3 \\ & (p - f)(y) \\ & = (-8(y)^2 - 3) - ((y)^3 + 9(y)) \\ & = -y^3 - 8y^2 - 9y - 3\end{aligned}$$

Math Sheet

Name _____ Score _____ / 10 Teacher _____ Date _____

Function Operations and Composition

Answer Key

Apply each operation at the given argument. Simplify exactly and state quotient restrictions.

7. $g(x) = -5x - 1$

$$h(x) = x^3 - 5x$$

$$\left(\frac{g}{h}\right)(y)$$

$$= \frac{-5y - 1}{y^3 - 5y}$$

$$= \frac{-5y - 1}{y^3 - 5y}$$

$$\text{Restriction: } y^3 - 5y \neq 0$$

8. $p(x) = -4x^2 + 1$

$$g(x) = 5x + 10$$

$$(g \cdot p)(y)$$

$$= (5y + 10) \cdot (-4y^2 + 1)$$

$$= -20y^3 - 40y^2 + 5y + 10$$

9. $f(x) = 6x + 1$

$$g(x) = 2x + 11$$

$$(f \circ g)(10)$$

$$g(10) = 2(10) + 11$$

$$= 31$$

$$f(31) = 6(31) + 1$$

$$= 187$$

10. $f(x) = -10x + 8$

$$p(x) = x^2 - 10$$

$$(p \circ f)(y + 9)$$

$$f(y + 9) = -10(y + 9) + 8$$

$$= -10y - 82$$

$$p(-10y - 82) = (-10y - 82)^2 - 10$$

$$= 100y^2 + 1640y + 6714$$