

Algebra 2 – Function Notation, Operations, and Composition Worksheet

Name: Key Hour: _____

Use the following functions to answer the questions below.

$$f(x) = 3x + 5, \quad g(x) = x^2, \quad k(x) = -x - 8, \quad m(x) = 5x + 1$$

1. Evaluate $f(-2)$.

$$\begin{aligned} f(-2) &= 3(-2) + 5 \\ &= -6 + 5 \\ &= -1 \end{aligned}$$

2. Evaluate $k(6)$.

$$\begin{aligned} k(6) &= -(6) - 8 \\ &= -6 - 8 \\ &= -14 \end{aligned}$$

3. Evaluate $m(p-2)$.

$$\begin{aligned} m(p-2) &= 5(p-2) + 1 \\ &= 5p - 10 + 1 \\ &= 5p - 9 \end{aligned}$$

4. Evaluate $g(2x)$.

$$\begin{aligned} g(2x) &= (2x)^2 \\ &= 2x \cdot 2x \\ &= 4x^2 \end{aligned}$$

5. Evaluate $k(x^2+1)$.

$$\begin{aligned} k(x^2+1) &= -(x^2+1) - 8 \\ &= -x^2 - 1 - 8 \\ &= -x^2 - 9 \end{aligned}$$

6. Evaluate $f(x) + k(x)$.

$$\begin{aligned} 3x + 5 + (-x - 8) \\ 2x - 3 \end{aligned}$$

7. Evaluate $m(x) - f(x)$.

$$\begin{aligned} 5x + 1 - (3x + 5) \\ 5x + 1 - 3x - 5 \\ 2x - 4 \end{aligned}$$

8. Evaluate $(g \cdot f)(x)$.

$$\begin{aligned} x^2(3x + 5) \\ 3x^3 + 5x^2 \end{aligned}$$

9. Evaluate $f(g(x))$.

$$\begin{aligned} f(g(x)) &= f(x^2) = 3(x^2) + 5 \\ &= 3x^2 + 5 \end{aligned}$$

10. Evaluate $k(m(x))$.

$$\begin{aligned} k(m(x)) &= k(5x+1) = -(5x+1) - 8 \\ &= -5x - 1 - 8 \\ &= -5x - 9 \end{aligned}$$

11. Evaluate $g(m(x))$.

$$\begin{aligned} g(m(x)) &= g(5x+1) = (5x+1)^2 \\ &= (5x+1)(5x+1) \\ &= 25x^2 + 5x + 5x + 1 \\ &= 25x^2 + 10x + 1 \end{aligned}$$

12. Evaluate $k(g(x))$.

$$k(g(x)) = k(x^2) = -x^2 - 8$$