Name: _____ Date: _____ **Unit 3 Class Work**

Operation with Functions Class Work

Objective: Today you will be able to operate with functions.

★ ***Guided Example:*** Consider the functions $f(x) = x^3$, $g(x) = 2x^2$, and $h(x) = -4x$.

1. Determine each of the following.

a. $f(2x)$ b. $g(x + 1)$ c. $f(3x)h(3x - 1)$ d. $\frac{g(4x)h(-2x)}{4}$

e. $f(x) - h(5x + 2)$ f. $g(3x) + f(-x)$

☞ ***Now You Try Some:*** Consider the functions $f(x) = -x^3$, $g(x) = 3x - 1$, and $h(x) = 4x^2$.

2. Determine each of the following.

a. $f(3x)$ b. $g(2x - 2)$ c. $h(3x)g(-2x - 1)$ d. $\frac{g(6x)h(-x)}{2}$

e. $g(-x) + h(2x)$ f. $f(x) - g(2x)$

Closure:

For ANY given function, m(x), describe how you could determine m(2x + 1).

✐ ***Homework:*** Consider the functions $f(x) = x^3 + 1$, $g(x) = -3x^2$, and $h(x) = -5x$. Determine each of the following.

a. f(4x)

b. g(8x - 9)

c. f(2x)h(10x – 3)

d. $\frac{g(8x)h(-x)}{8}$

e. h(-2x + 3) – g(2x)

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

Solutions:

a. $f(4x) = 64x^3 + 1$

b. $g(8x – 9) = -192x^2 + 432x - 243$

c. $f(2x)h(10x – 3) = (8x^3 + 1)*(-50x + 15) = -400x^4 + 120x^3 – 50x + 15$

d. $\frac{g(8x)h(-x)}{8} = \frac{-192x^2 * 5x}{8} = \frac{-960x^3}{8} = -120x^3$

e. $h(-2x + 3) – g(2x) = 10x^2 – 15x – (-24x^3) = 24x^3 + 10x^2 – 15x$

f. $f(2x) + g(-x) = 8x^3 + 1 + 5x = 8x^3 + 5x + 1$