Name:_____ Hour: _____ Date: _____

NOTES: Section 6.3 – Perform Function Operations and Composition

Goals: #1 - I can add, subtract, multiply, and divide functions and state their domain.

#2 - I can evaluate compositions of functions and state their domain.

Homework: Lesson 6.3 Worksheet   

Notes:

So far, we have learned how to add, subtrcat, multiply, and divide _____ functions. These operations can be defined for _____ number of functions.

Let f and g be any two functions. We can peform the four basic operations on f and g.

Addition	
Subtraction	
Multiplication	
Division	

The _____ consists of the _____ that are in the domains of _____ f and g.

Example #1: Perform the following operations on f and g.

1. Let $f(x) = 4x^{1/2} - 1$ and $g(x) = -9x^{1/2} + 3$. Find the following.
   a. $f(x) + g(x)$ b. $f(x) - g(x)$

   c. the domains of $f + g$ and $f - g$

Name:_____ Hour: _____ Date: _____

You practice: Perform the following operations on f and g.

1. Let $f(x) = 5x^{1/3} + 1$ and $g(x) = -11x^{1/3} - 4$. Find the following.
   a. $f(x) + g(x)$
   b. $f(x) - g(x)$
   c. the domains of $f + g$ and $f - g$

Example #2: Perform the following operations on f, g, and h.

2. Let $f(x) = 6x$, $g(x) = x^{3/4}$, and $h(x) = -2x^{1/2}$. Find the following.
   a. $f(x) \cdot g(x)$
   b. $f(x) \cdot h(x)$
   c. the domains of $f \cdot g$ and $f \cdot h$
   d. $\frac{f(x)}{g(x)}$
   e. $\frac{f(x)}{h(x)}$
   f. the domains of $\frac{f}{g}$ and $\frac{f}{h}$

Name:_____ Hour: _____ Date: _____

You practice: Perform the following operations on f, g, and h.

1. Let $f(x) = 8x$, $g(x) = 2x^{5/6}$, and $h(x) = -x^{1/3}$. Find the following.

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

b. $f(x) \cdot h(x)$

c. the domains of $f \cdot g$ and $f \cdot h$

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

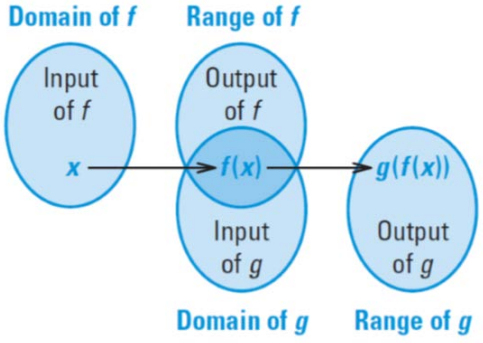
e. $\frac{g(x)}{h(x)}$

f. the domains of $\frac{f}{g}$ and $\frac{g}{h}$

Notes:

Another operation that can be performed within two functions is _____.

The _____ of a function g with a function f is: $\boldsymbol{g(f(x))}$



Name:_____ Hour: _____ Date: _____

Example #4: Perform the following operations on f, g, and h.

1. Let $f(x) = 3x - 8$, $g(x) = 2x^2$, and $h(x) = \frac{1}{x+1}$. Find the following.

   a. $f(g(x))$

   b. $g(h(x))$

   c. $h(f(x))$

   d. $g(g(x))$

   e. the domains of each composition

You practice: Perform the following operations on f, g, and h.

1. Let $f(x) = 5x - 2$, $g(x) = -x^2$, and $h(x) = \frac{x-2}{4}$. Find the following.

   a. $f(g(x))$

   b. $g(h(x))$

   c. $h(f(x))$

   d. $g(g(x))$

   e. the domains of each composition