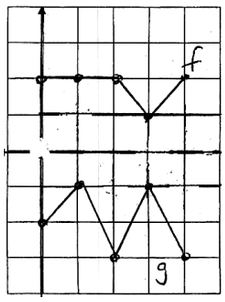
Name: _____ **Precalculus Unit 3, Lesson 5**

Aim: How do we find a composition of functions?

I. Do Now:

1. Given the graphs of $f(x)$ and $g(x)$, complete the table below and then use the table to draw the graph of $(f+g)(x)$ on the same axes.



x	$f(x)$	$g(x)$	$(f+g)(x)$

2. Given $f(x)=x^2$ and $g(x)=x+1$, find:
   (a) $(f+g)(x)$

   (b) $(f+g)(2)$

   (c) $(fg)(x)$

   (d) $(f/g)(x)$

   (d) $(g/f)(x)$

   (e) $f(g(3))$

II. Referring to #2, what is $(f\circ g)(x)$?
Notes:

Note: The domain of an arithmetic combination of functions or a composition of functions is the intersection of the domains of the functions. In the case of the quotient, $f(x)/g(x)$, there is an additional requirement that $g(x)\neq 0$.

III. Examples and Applications

3. If $f(x)=x+2$ and $h(x)=4-x^2$, find:
   (a) $(f\circ h)(x)$

   (b) $(h\circ f)(x)$

   (c) Does $(h\circ f)(x)=(f\circ h)(x)$? Explain.

4. If $f(x)=2x-5$ and $g(x)=\dfrac{x+5}{2}$ find:
   (a) $(f\circ g)(x)$

   (b) $(g\circ f)(x)$

   (c) Does $(f\circ g)(x)=(g\circ f)(x)$? Explain.

Under what conditions does $(f\circ g)(x)=(g\circ f)(x)$?

5. Find the composition $(f\circ g)(x)$ for the functions $f(x)=x^2-9$ and $g(x)=\sqrt{9-x^2}$. Then, find the domain of $(f\circ g)(x)$.

HW20
Read pages 52 – 55.
p. 56: 19, 23, 26, 27, 44, 61ab, 67 – 70.
p. 48: 52, 62