## Re-teach Composition of functions

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

- 1. Evaluate g(x) first.
- 2. Then use g(x) as the input for f

## Examples

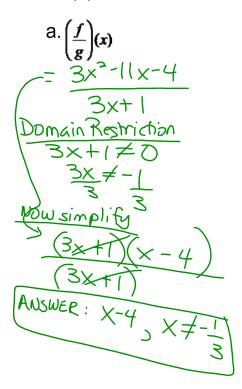
1. 
$$g(x) = x^2$$
 and  $f(x) = x-5$ 

a. 
$$(f \circ g)(-3)$$
 b.  $(g \circ f)(-2)$  c.  $(g \circ f)(a)$   
=  $f(g(-3))$  =  $g(f(-2))$   $g(f(a))$   
=  $f(-3)^2$  =  $g(-2-5)$  =  $g(a-5)$   
=  $g(-7)$  =

2. 
$$f(x) = 3x^2 - 11x - 4$$
 and  $g(x) = 3x+1$ 

a. 
$$(f \circ g)(-2)$$
  
=  $f(g(-2))$   
=  $f(3(-2)+1)$   
=  $f(-5)$   
=  $3(-5)^2-11(-5)-4$   
=  $3(25)+55-4$   
=  $75+55-4$   
=  $126$ 

3.  $f(x) = 3x^2 - 11x - 4$  and g(x) = 3x+1



b. 
$$(f \circ g)(x) = f(g(x))$$
  
=  $f(3x+1)$   
=  $3(3x+1)^2 - ||(3x+1)^2 - 4|$   
=  $3(9x^2+6x+1) - 33x-11-4$   
=  $27x^2+18x+3-33x-15$   
=  $27x^2-15x-12$ 

## Skill 7: Composition of Functions for example: what we just did!

Skill 8: Simplifying Complex Expressions for example: multiplying/dividing complex numbers

