

October 22

If  $f(x) = 4x - 7$  and  $g(x) = 3x^2$



Find  $f(g(x))$

$$f(x)g(x) \rightarrow (4x-7)(3x^2)$$
$$12x^3 - 21x^2$$

Find  $g(f(x))$

$$12x^2 - 7$$
$$4(3x^2) - 7$$

Test 3 - THURSDAY Oct 24th

Biorythm projects due WEDNESDAY Oct 30th

Corrections for test 2 due MONDAY Nov 4th



If  $f(x) = 4x - 7$  and  $g(x) = 3x^2$

Find  $f(g(x))$

$$= f(3x^2)$$

$$= 4(3x^2) - 7$$

$$f(5) = 4(5) - 7$$

$$f(29) = 4(29) - 7$$

Find  $g(f(x))$

$$g(4x-7) = 3(4x-7)^2$$

$$3(4x-7)^2$$

$$3(4x-7)(4x-7)$$

$$3(16x^2 - 28x - 28x + 49)$$

$$48x^2 - 84x - 84x + 147$$

$$48x^2 - 168x + 147$$

$$(12x-21)^2$$

$$(12x-21)(12x-21)$$

$$144x^2 - 252x - 252x + 441$$

$$144x^2 - 504x + 441$$

October 22



Students will verbally explain how to  
find the inverse function

(using the words:  
domain, range, opposite ...)



Two functions,  $f(x)$  and  $g(x)$  are said to be inverses of each other if  
(for all values of  $x$  where the expressions are defined).

$$f(x) = x^2$$

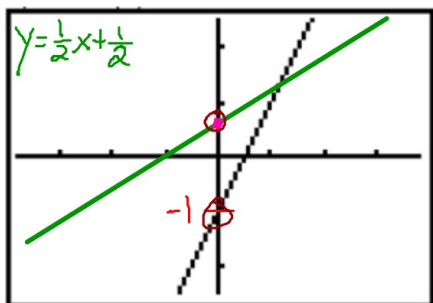
$$g(x) = \sqrt{x}$$

$$f(g(x)) = g(f(x)) = x$$

$$f(g(x)) = f(\sqrt{x}) = (\sqrt{x})^2 = x$$

$$g(f(x)) = g(x^2) = \sqrt{x^2} = x$$

The graph of  $f(x)$  is shown below



$$y = 2x - 1$$

$$\frac{y+1}{2} = \frac{2x}{2}$$

$$x = \frac{y+1}{2} = \frac{1}{2}(y+1) = \frac{1}{2}y + \frac{1}{2}$$

(a) Write an equation for  $f(x)$

$$y = 2x - 1$$

(b) Algebraically find the  $g(x)$ , where  $g(x)$  is the inverse of  $f(x)$

$$y = \frac{x+1}{2}$$

(c) In the window, sketch the graph of  $y = g(x)$

(d) What is the y-intercept of  $f$ ?

$$-1$$

(e) What is the x-intercept of  $g$ ?

$$-1$$

(f) What is the x-intercept of  $f$ ?

$$.5 = \frac{1}{2}$$

(g) What is the y-intercept of  $g$ ?

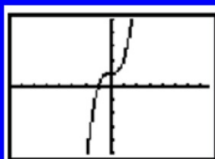
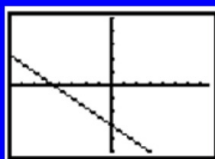
$$\frac{1}{2}$$

(h) How do the domain and range of inverses relate to each other?

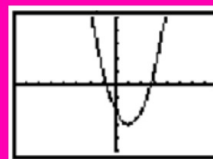
x-values y-values

domain of  $f$  = range of  $g$   
domain of  $g$  = range of  $f$

Have an Inverse Function



Don't have an Inverse Function



$x$	-1	0	1	2	3
$n(x)$	0	-2	2	-1	1

$x$	-1	0	1	2	3
$r(x)$	2	-1	3	1	-2

inverse  
func

(a)  $r^{-1}(-1) = 0$

y-value

(d)  $r(n^{-1}(2)) = r(1) = 3$

$n^{-1}(2) = 1$

y-value