

Daily Agenda

Learning Targets:
 I can find an inverse algebraically.
 I can determine if a function is 1:1.

<p>Homework 1.5 Formative</p>	<p>Assessments Unit 1 Test 9/15 No Calculator</p>
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Keep your eyes on the stars, and your feet on the ground.
 -Theodore Roosevelt

Nov 15-8:24 PM

$$3g(x) + 2f(x) =$$

$$3(x^2 + 5) + 2(2x - 3)$$

$$3x^2 + 4x + 9$$

Sep 7-11:00 AM

1.5 Inverse Functions

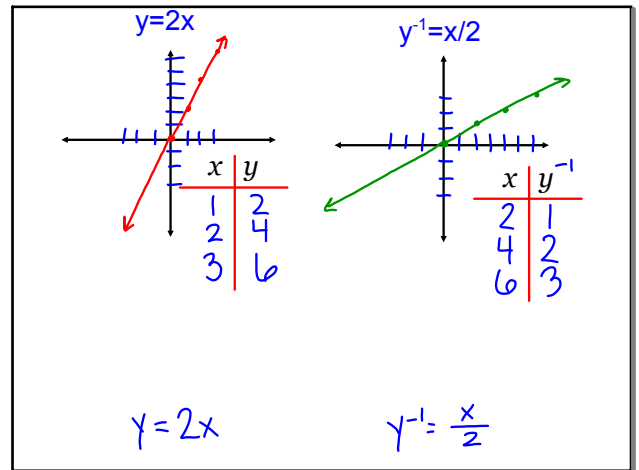
The inverse of a function "undoes" the steps of the original function.

$$y = 2x \qquad y^{-1} = \frac{x}{2}$$

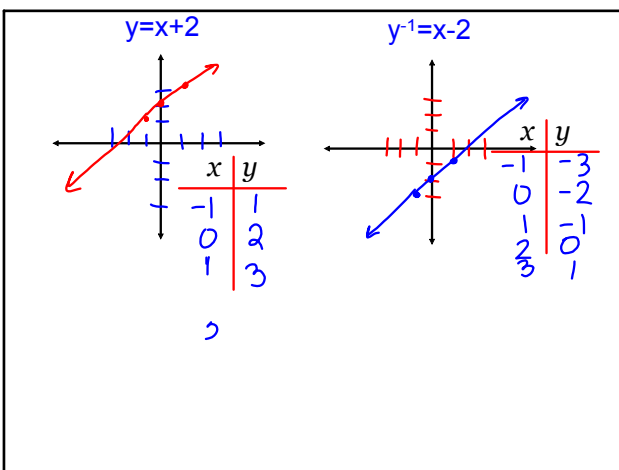
"y inverse"

Make a table of values and graph the original function and its inverse. What do you notice?

Sep 15-10:27 PM



Nov 8-8:46 AM



Nov 8-8:46 AM

Conclusions

Inverses reflect over the line $y=x$

Ordered pairs (a,b) switch in the inverse to become (b,a)

Inverse Notation

y^{-1} "y inverse"

$f^{-1}(x)$ "f inverse of x"

Nov 8-1:51 PM

How do we find inverses algebraically?

Change $f(x)$ to y $f(x)=3x+7$
 $y=3x+7$

Switch all x 's and y 's $x=3y+7$

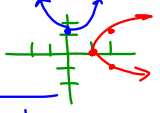
Solve for y $\frac{x-7}{3} = \frac{3y}{3}$

Replace y with $f^{-1}(x)$ $\frac{x-7}{3} = y$
 $\frac{1}{3}x - \frac{7}{3} = y$
 $f^{-1}(x) = \frac{x-7}{3}$ or $\frac{1}{3}x - \frac{7}{3}$

Nov 8-1:51 PM

Table Group

Find the inverse of the given function.
 Is the inverse a function?



$f(x) = x^2 + 1$

$y = x^2 + 1$
 $x = y^2 + 1$
 $\sqrt{x-1} = \pm\sqrt{y^2}$

$y = \pm\sqrt{x-1}$
 $f^{-1}(x) = \pm\sqrt{x-1}$

Nov 8-1:55 PM

Vertical Line Test
 determines if equation is a function


Horizontal Line Test
 determines if **inverse** of the equation is a function

One to One
 - the inverse is also a function.

Nov 4-8:27 AM

Table Group

Find the inverse of the given function.
 Is the inverse a function?



$f(x) = \sqrt{x-4}, x \geq 4$

$y = \sqrt{x-4}$ $y \geq 0$
 $x = \sqrt{y-4}$

$f^{-1}(x) = x^2 + 4, x \geq 0$

When original is restricted, you must restrict inverse

Nov 8-1:55 PM

Table Group

Find the inverse of the given function.
 State domain and range of inverse.

$f(x) = x^2 + 5, x \leq 0$

Nov 8-1:55 PM