

Intro to Inverses Notes

Inverse: what is created when you switch the x & y values

→ notation: -if $f(x)$ is the original, $f^{-1}(x)$ is the inverse if it is a function.

- if the inverse is not a function leave it as $y =$ (this is just a relation of x & y not a function)

how to find the inverse?

with tables: switch the x & y columns

ex		inverse	
x	y	x	y
-1	4	4	-1
0	6	6	0
1	8	8	1
2	10	10	2

graphically: pts go from (x, y) to (y, x)

OR visually you reflect the graph over $y=x$ line

* $y=x$ is a line through $(0,0)$ with slope of 1

algebraically: given the original equation write as $y =$, then switch the x & y and solve for y. In order use inverse notation you must check if it's a function (passes vertical line test)

- * remember \pm when square rooting
- * final answer put in radical form instead of exponential, if applies

ex $f(x) = 2x - 4$

$$y = 2x - 4$$

$$x = 2y - 4$$

$$\frac{x+4}{2} = \frac{2y}{2}$$

$\frac{x+4}{2} = y$ is it a function? Yes!

$$f^{-1}(x) = \frac{x+4}{2}$$