1.5 Inverse Function and its Properties

An **inverse function** means doing the same steps but in a reverse order.

An **inverse function** is not a reciprocal function.

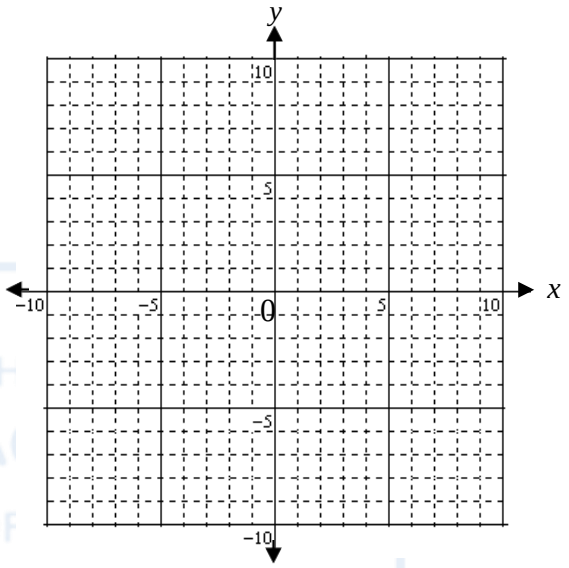
To graph an inverse function:

1. Make a table of values for the original function.
2. Make a new table for the inverse function by interchanging the x and y values. (i.e. x become y and y becomes x)
3. Graph the new table of values.

Example 1: Graph the inverse of $f(x) = 4x - 5$.

x	$y = f(x)$

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



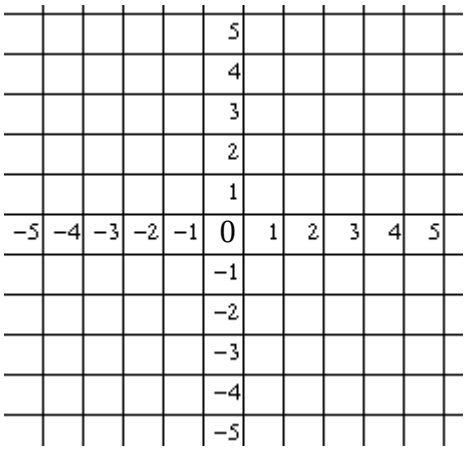
* Remember to label each graph.

To determine <u>the rule (equation)</u> for an inverse function:

1. Rewrite the relation as an equation (replace the $f(x)$ with y)
2. Isolate the y variable.
3. Interchange the x and y letters.
4. Isolate the **<u>new</u>** y variable using ALL of your algebraic skills.
5. Replace the **<u>new</u>** y with $f^{-1}(x)$.

Example 2: Determine the inverse function for the relation:

$f(x) = 5x - 3$. Sketch both on the grid.



Something to think about.....

If the relation $f(x)$ is a LINEAR function, if $f^{-1}(x)$ also a function??

If the relation $f(x)$ has a domain D and a range R, what is the domain and range of its inverse $f^{-1}(x)$?