Topic: Verify and Graph Inverses Functions **Name:** _____

What am I learning today?

_____

_____

Warm-Up:

Warm-up: Use the 4 step process to find the inverse of the following:

1) $f(x) = -5x + 3$

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

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

Steps to Verify

To prove f(x) and g(x) are inverses, you must show that ① ②

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

You must show only ONE mathematical step at a time to actually PROVE the concept!!

Examples

Verify if the functions are inverses

Verify f(x) and g(x) are inverses.

1) $f(x) = -\frac{1}{3}x^2$ and $g(x) = 3\sqrt{x}$

2) $f(x) = 2x + 14$, $g(x) = \frac{1}{2}x - 7$

3) $f(x) = \frac{2x+7}{5}$, $g(x) = \frac{5x-7}{2}$

4) $f(x) = \sqrt[3]{2x}$, $g(x) = \frac{1}{2}x^3$

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Inverse Graphs

The _____ of an inverse relation is the reflection of the points or graph of the original relation over the line _____=_____.
Note: given a table of values, switching the x and _____ values yields the inverse graph.

Horizontal Line Test

If a function has an _____ that is also a function, then a _____ line through the graph of the original function will pass through _____ _____ point.

Steps
Graphing Inverses

In **INVERSES**, the **outputs** become the **inputs**, so...**X's** become **Y's** and **Domain** becomes **Range**

Original Relation

x	y
-2	4
-1	2
0	0
1	-2
2	-4

Domain:
Range:

_____

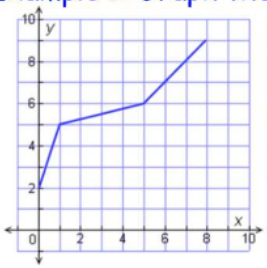
Domain:
Range:

Inverse Relation

x	y

Examples
Graphing the Inverse

Example 1: Graph the inverse of the function.



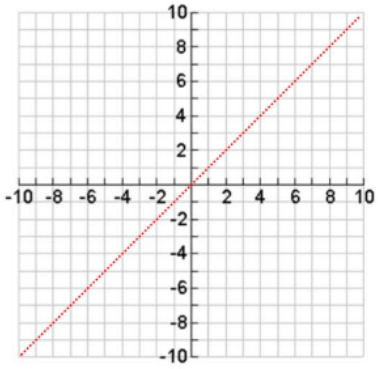
x	0	1	5	8
y	2	5	6	9

x				
y				

Example 2

Original: $y = 2x - 4$

Inverse:



x	y
2	
1	
0	
-1	
-2	

x	y

Summary
Summarize the lesson in your own words