6.2 Inverse Functions – Day 2

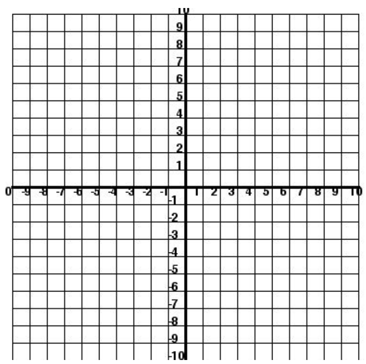
Objectives: Restricting domains to insure inverses are functions
Determining if two functions are inverses of one another

Warm-Up: Write the inverse of each relation or function.

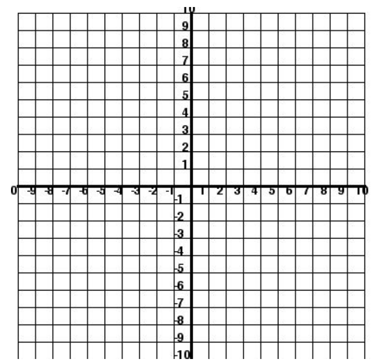
1. $\{(8,6),(-8,-1),(7,-3),(4,1)\}$ **2.** $f(x) = -\frac{2}{3}x - 4$

Graph the function using a table. Switch the x & y values and graph the inverse.

Ex. $f(x) = x^2 + 3$.



$f(x) = x^2 + 5$



Function:
D: **R:**

Inverse:
D: **R:**

Function:
D: **R:**

Function:
D: **R:**

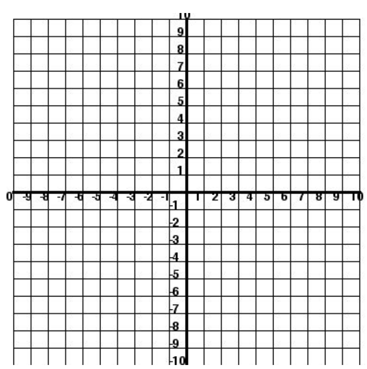
Is the inverse a function? ____________________ **Why or why not ?** ________________________

Horizontal Line Test: Just as we use the ____to determine if a graphed equation is a function, we can use the ____to predict if its inverse will be a function.

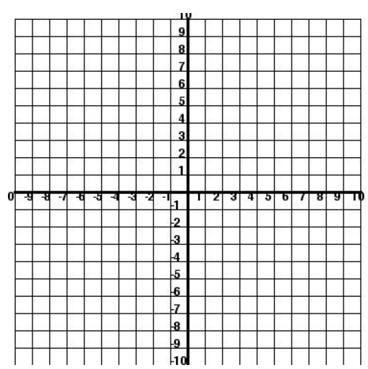
Sometimes it is necessary to restrict the _______________________of a relation in order for its inverse to be a function.

How might we restrict the Domain in each example so that their inverses will be functions?

ex. $f(x) = x^2 + 3$.



$f(x) = x^2 + 5$



Function:
D: **R:**

Inverse:
D: **R:**

Function:
D: **R:**

Inverse:
D: **R:**

Two functions are inverses of one another if and only if: $f[g(x)] = x$ **and** $g[f(x)] = x$.

Use composition of functions to determine if each pair of functions are inverses of one another.

Ex. $f(x) = 3x + 9$ *and* $g(x) = \frac{1}{3}x - 3$

1. $f(x) = 2x - 10$ *and* $g(x) = \frac{1}{2}x + 5$

2. $f(x) = -6x$ *and* $g(x) = \frac{1}{6}x$

3. $f(x) = 8x - 10$ *and* $g(x) = \frac{x+10}{8}$

4. $f(x) = (x + 6)^2$ *and* $g(x) = \sqrt{x} - 6$

5. $f(x) = \frac{2}{3}x^3$ *and* $g(x) = \sqrt[3]{\frac{2}{3}x}$