

Algebra 2A Notes

Name: _____

6-7 Inverse Relations and Functions

Date: _____ Hr: _____

Objectives:

1. To find the inverse of a relation or function.

Common Core Content Standards:

F.BF.4.a. Solve an equation of the form $f(x) = c$ for a simple function f that has an inverse and write an expression for the inverse.

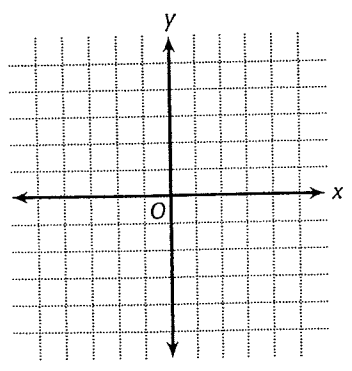
The _____ of a relation or function is formed by switching its x and y values

Example 1: Finding the Inverse of a Relation

| | | | | |
|-----|----|----|---|---|
| x | -2 | -1 | 0 | 1 |
| y | 2 | 0 | 3 | 0 |

- a.) What is the inverse of the relation?

- b.) What are the graphs of the relation and its inverse?



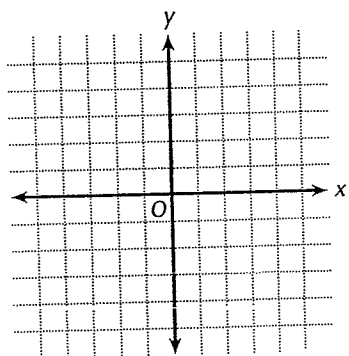
The graphs of a relation and its inverse are reflections of each other in the line _____.

Example 2: Finding an Equation for the Inverse

What is the inverse of the relation described by $y = 5x^2 + 2$?

Example 3: Graphing a Relation and Its Inverse

What is the graph of $y = 5x^2 + 2$ and its inverse?



Example 4: Finding an Inverse Function - Consider the function $g(x) = \frac{-2}{3}x + 7$

a.) What are the domain and range of g ?

b.) What is g^{-1} , the inverse of g ?

c.) What are the domain and range of g^{-1} ?

d.) Is g^{-1} a function? Explain.

Example 5: Finding the Inverse of a Formula

The formula for finding the area of a circle is $A = \pi r^2$. a.) What is the inverse of this function? b.) What is the radius of a circle with area 30 ft^2 ?

For any function f , each x -value in the domain corresponds to exactly one y -value in the range. For a _____ function, the reverse is also true.

Take Note

Key Concept Composition of Inverse Functions

If f and f^{-1} are inverse functions, then

$(f^{-1} \circ f)(x) = x$ and $(f \circ f^{-1})(x) = x$ for x in the domains of f and f^{-1} , respectively.

Example 6: Composing Inverse Functions

For $h(x) = \frac{3}{2-x}$, what is each of the following?

a.) $h^{-1}(x)$

b.) $(h \circ h^{-1})(2)$

c.) $(h^{-1} \circ h)(2)$

