Inverse Functions

By the end of this lesson, I will be able to answer the following questions…

1. How do I **build an inverse function algebraically** from an original function?

2. What are the characteristic of **inverse functions**?

3. What is a **one-to-one function**?

Vocabulary

1. Inverse function notation:

2. One-to-one function:

Prerequisite Skills with Practice

Put the following equations in terms of x:

$$y = \frac{2x-4}{5x+1}$$

$$y = -\frac{(x-3)^3}{2} + 10$$

Definition of inverse functions.

Suppose f(x) and g(x) are inverse functions. The following would hold true….

1. f[g(x)]=x and g[f(x)]=x

2. The Domain of f(x) becomes the Range of g(x) and Range of f(x) becomes the Domain g(x)

3. Graphs of f(x) and g(x) reflect about the y = x axis.

Verify that $f(x) = 2x^3 - 1$ and $g(x) = \sqrt[3]{\frac{x+1}{2}}$ are inverses.

Finding the inverse of functions algebraically.

1. Switch x and y.
2. Solve for y.

Other things to consider…

- One-to-one?
- Restricted domain?
- Inverse can't be found by conventional means?

$f(x) = -\frac{2}{3}x + 4$

$g(x) = \sqrt{x+2} - 3$

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

$l(x) = \frac{x}{x-4} + 6$

$m(x) = 2x^3 - x + 3$

Interpreting inverse values/ regular values from a graph.

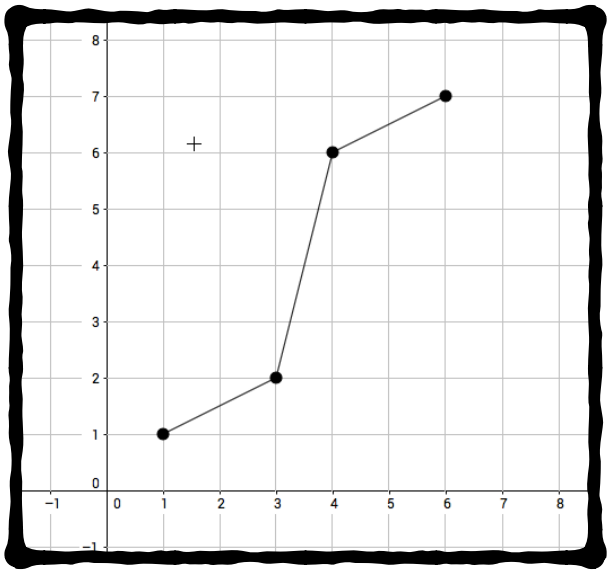
$f^{-1}(2) =$

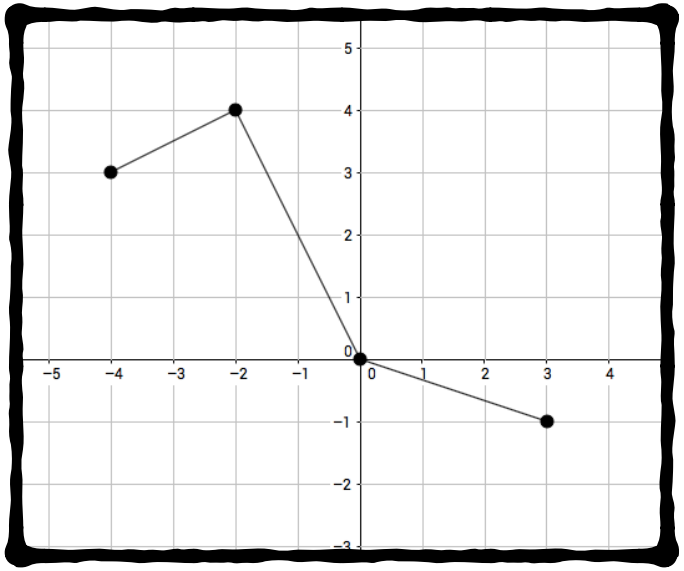
$g^{-1}(-1) =$

$(f \circ g)(-1) =$

$(f^{-1} \circ f^{-1})(1) =$

$(f \circ g)(-2) =$





THE END

Visit PlottsMath for assignment details