Section 1.5 Inverse Functions

Objective: In this lesson you learned how to find inverses of functions graphically and algebraically.

Important Vocabulary   Define each term or concept.

Inverse function

One-to-one

Horizontal Line Test

I. The Inverse of a Function (Pages 120–122)

For a function f that is defined by a set of ordered pairs, to form the inverse function of f, . . .

What you should learn
How to find inverse functions informally and verify that two functions are inverses of each other

For a function f and its inverse f^{-1}, the domain of f is equal to

_____, and the range of f is equal to

_____.

To verify that two functions, f and g, are inverses of each other, . . .

Example 1:   Verify that the functions $f(x) = 2x - 3$ and $g(x) = \dfrac{x + 3}{2}$ are inverses of each other.

II. The Graph of an Inverse Function (Page 123)

If the point (a, b) lies on the graph of f, then the point

(_____,_____) lies on the graph of f^{-1} and vice versa. The

graph of f^{-1} is a reflection of the graph of f in the line

_____.

What you should learn
How to verify graphically and numerically that two functions are inverses of each other

III. The Existence of an Inverse Function (Page 124)

A function f has an inverse f^{-1} if and only if . . .

What you should learn
How to use graphs of functions to decide
inverses

If a function is one-to-one, that means . . .

To tell whether a function is one-to-one from its graph, . . .

Example 2:   Does the graph of the function at the right have an inverse function? Explain.
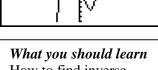

IV. Finding Inverse Functions Algebraically
    (Pages 125–126)

To find the inverse of a function f algebraically, . . .

1)

2)

3)

4)

5)

What you should learn
How to find inverse functions algebraically

Example 3:   Find the inverse (if it exists) of (x) $4x - 5$