

MATH-116 - Lecture 4 - 09/09/19

Math 116 - Lecture 4

Recall:

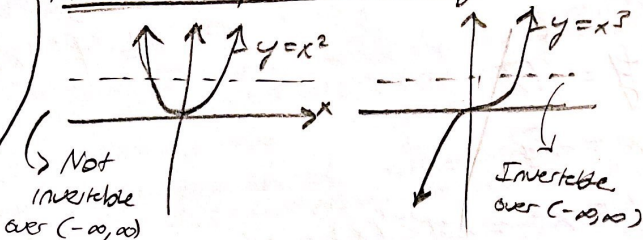
Input/output processes:

$$f: x \rightarrow \boxed{f(x)} \rightarrow f(x)$$

$$f^{-1}: f(x) \rightarrow \boxed{f^{-1}(f(x))} \rightarrow x$$

one-one \Leftrightarrow invertible. 3

Another technique of checking



Beware:

$$f(f^{-1}(x)) = x \quad \text{# Function}$$

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

For example, $f(x) = \frac{1}{x} \Rightarrow f^{-1}(x) = \frac{1}{x}$

$$f(f^{-1}(x)) = \frac{1}{\frac{1}{x}} = x \Rightarrow \text{Domain: } (-\infty, 0) \cup (0, \infty)$$

Example: find inverse of $\rightarrow f(x) = \frac{4x-1}{2x+3}$

let $y = f(x)$

$$\Rightarrow y = \frac{4x-1}{2x+3}$$

$$2xy + 3y = 4x - 1$$

$$x(2y - 4) = -1 - 3y$$

$$x = \frac{3y+1}{4-2y}$$

$$\Rightarrow f^{-1}(x) = \frac{3x+1}{4-2x}$$

Graphing Inverse:

If (a, b) is a point on the graph of $f(x)$, THEN (b, a) is a point on $f^{-1}(x)$.

