

# MTH 30 LECTURE NOTES (Ojakian)

## Topic 7: Inverse Functions

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### OUTLINE

(References: 1.7)

#### 1. Inverse Functions

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##### 1. Inverse Function - Via Table

The inverse of a function is the function that results when INPUT and OUTPUT are reversed.

Does this process always produce a function? When does it NOT work?

##### 2. Inverse Function - Given selected values

Example: If  $f(3) = 6$  and  $f(4) = 2$ , then what is  $f^{-1}(6)$ ?

##### 3. Inverse Function - Informal view as reversing the process

Example: What is the “reverse” of  $f(x) = x - 5$

Example: What is the “reverse” of  $f(x) = 3x + 1$

Application: Section 1.7: 47

##### 4. Inverse Function - Precise Definition

Can use to check algebraically

##### 5. Inverse Function - Domain and Range

Just flip them.

Example: Find the inverse of  $f(x) = 1 + \sqrt{x}$ , and find the domain/range of the inverse function.

Example: 1.7: Ex 44

##### 6. Inverse Function - Finding the inverse algebraically

Do the above examples that we did intuitively, but now algebraically

(a) Solve for  $x$

(b) Swap  $x$  and  $y$

##### 7. Inverse Function - Via Graph

Example: Just find particular values.

Example: Graph the entire inverse function.