

MTH 30 LECTURE NOTES (Ojakian)

Topic 7: Inverse Functions

OUTLINE

(References: 1.7)

1. Inverse Functions

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.

8. Exercises

Section 1.7: 1, 3, 6, 7 - 12, 17, 18, 19 - 22, 23 - 32, 33 - 36, 37 - 40, 45 - 47.