

One-to-one Functions



Preliminaries and Objectives

Preliminaries

- Functions
- Function Notation
- Graphs of Functions
- Inverse Functions

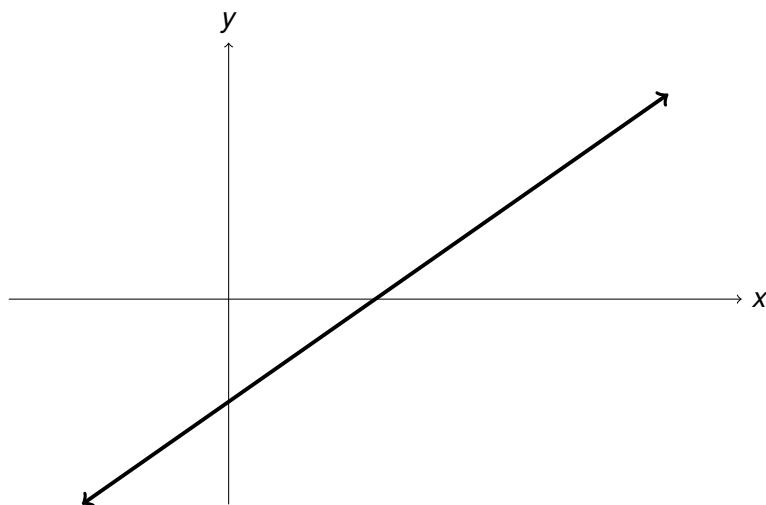
Objectives

- Define one-to-one functions

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One-to-one Functions

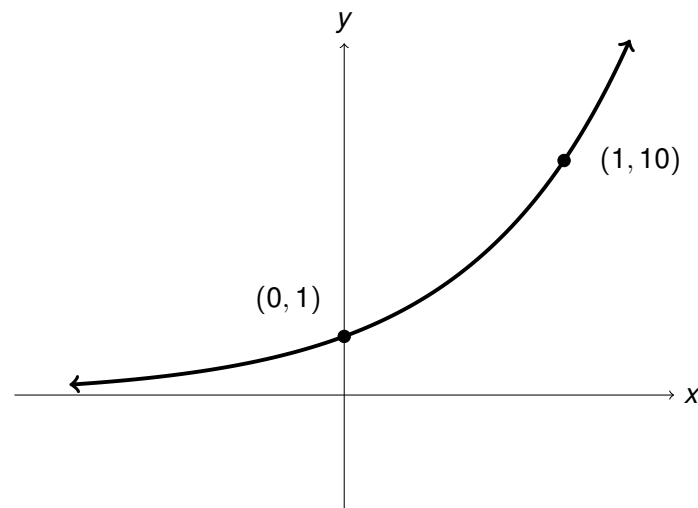
Lines



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One-to-one Functions

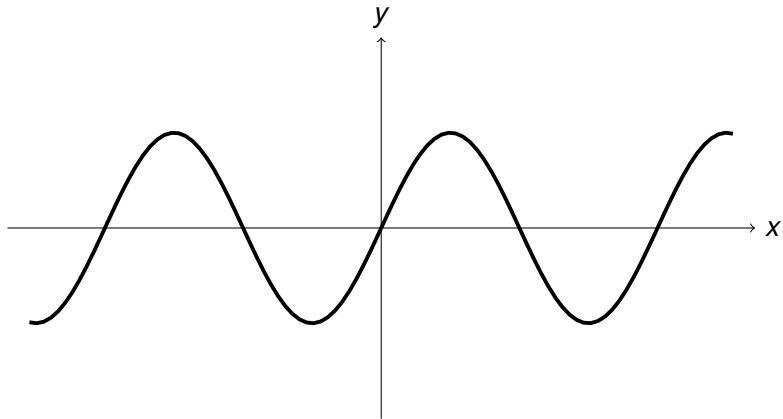
$$y = 10^x$$



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One-to-one Functions

$$y = \sin x$$



Recap

A function $y = f(x)$ is **one-to-one** if, for each possible output y , there is exactly one input x such that $y = f(x)$.

Horizontal Line Test: If any horizontal line crosses the graph of $y = f(x)$ at most once, then $f(x)$ is a **one-to-one function**.

If $y = f(x)$ is a one-to-one function, then the inverse function f^{-1} is defined so that $f^{-1}(y) = x$.