

## One-to-one Functions



## Preliminaries and Objectives

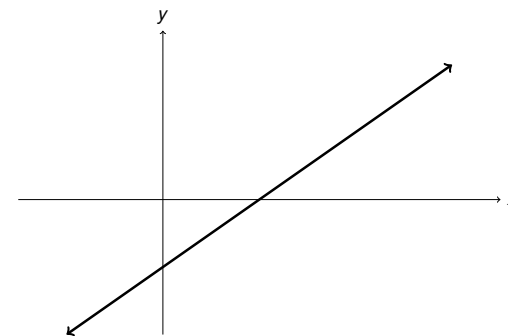
### Preliminaries

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

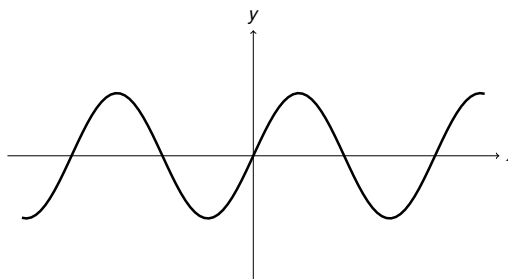
### Objectives

- Define one-to-one functions

## Lines



$$y = \sin x$$



## 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  $f^{-1}(y) = x$ .

$$y = 10^x$$

