Lecture 0.2: Functions

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This lecture is all about a review of functions.

1 Functions

The first big point he's making is that in order for something to be a function, each input X needs to be associated with only one output $f(X)$.

1.1 Special Functions

Need to be careful with something like the following:

$$x^2 + y^2 = 25 \tag{1}$$

$$y^2 = 25 - x^2 \tag{2}$$

$$y = \pm\sqrt{25 - x^2} \tag{3}$$

This isn't a function because there can always be two values (plus or minus) that satisfy y^2.

1.1.1 Piecewise functions

One of the most common functions is the absolute value function, which is an example of a *piecewise function*:

$$|x| = \begin{cases} x & \text{if } x \geq 0 \\ -x & \text{if } x < 0 \end{cases} \tag{4}$$