lulumath

Examples and Nonexamples of Functions
Video Notes
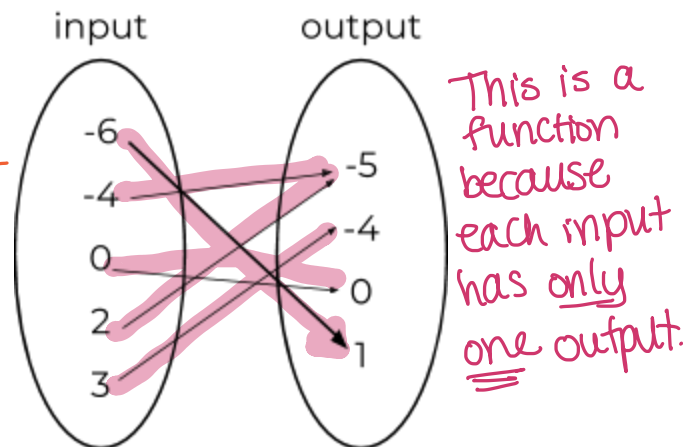
[Video Link](#)

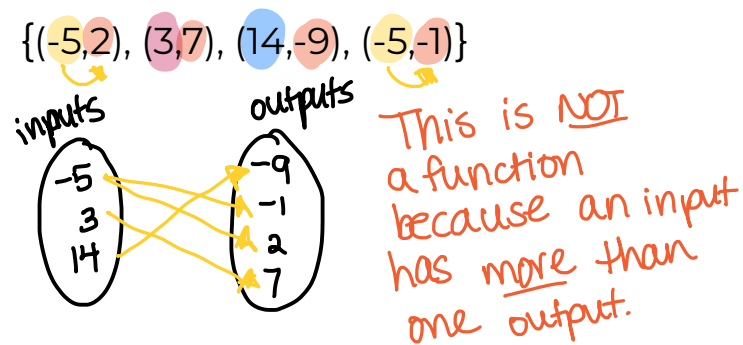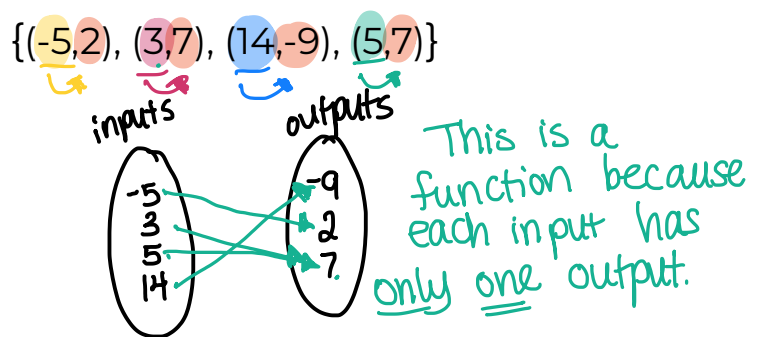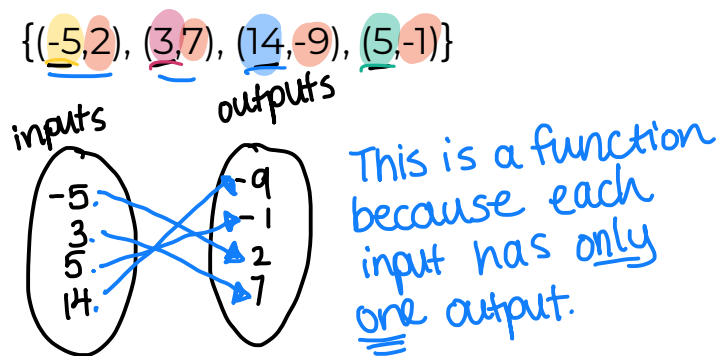# Examples and Nonexamples of Functions

Background Knowledge:
- What is a function?

Functions are relations in which each input has only one output.

Functions can be represented in multiple ways: algebraically, numerically, graphically.

(equation) (table of values, coordinates)

Are these functions?

{(-5,2), (3,7), (14,-9), (5,-1)}

inputs   outputs

This is a function because each input has only one output.

{(-5,2), (3,7), (14,-9), (5,7)}

inputs   outputs

This is a function because each input has only one output.

{(-5,2), (3,7), (14,-9), (-5,-1)}

inputs   outputs

This is NOT a function because an input has more than one output.

input   output

This is a function because each input has only one output.

Are these functions?

Each input has only one output.

$y = 4x - 3$

A single input
input will produce
a single output.

$y = 4(5) - 3$
$y = 20 - 3$
$y = 17$ ↑output

∴ This is a function because each input has only one output.

$y = -2x^2 - 5x + 1$ $x = 2$

$y = -2(2)^2 - 5(2) + 1$
$y = -2(4) - 5(2) + 1$
$y = -8 - 10 + 1$
$y = -17$

Each input will only produce a single output.

∴ This is a function!

$x^2 + y^2 = 16$

$x = 0$
This input produces

$0^2 + y^2 = 16$
$0 + y^2 = 16$
$\sqrt{y^2} = \sqrt{16}$

$y = \pm 4$
$\boxed{2}$ outputs!

∴ This is NOT a function!

$y = 3^x$ $x = 4$

$y = 3^4$
$y = 81$

This is a function, because each input has only one output.

$x^2 + y^2 = 16$ $x = 4$
$4^2 + y^2 = 16$
$16 + y^2 = 16$
$y^2 = 0$
$y = 0.$

Stay tuned for the video on the VLT!