



# Function Notation - Part I

Video Notes

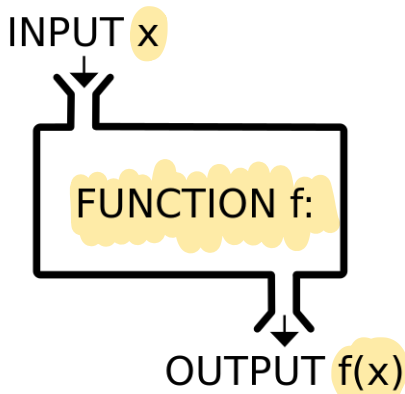
[Video Link](#)

# Function Notation Part I

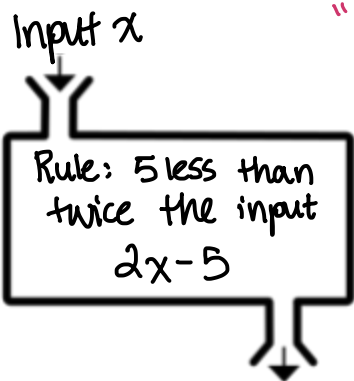
Background Knowledge:

- What is a Function?

Function machine:



NOT multiplication  
"f OF x"



$$y = 2x - 5$$

$$g(x) = 2x - 5$$

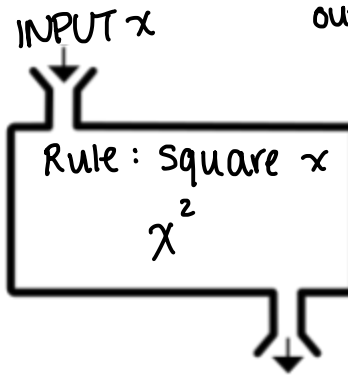
output  $g(x)$

Example:

Typically, we see

$$y = x^2$$

output  $\rightarrow f(x)$



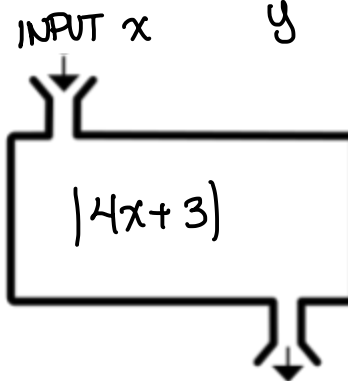
$$y = f(x)$$

$$y = x^2$$

$$f(x) = x^2$$

OUTPUT  $f(x) = x^2$

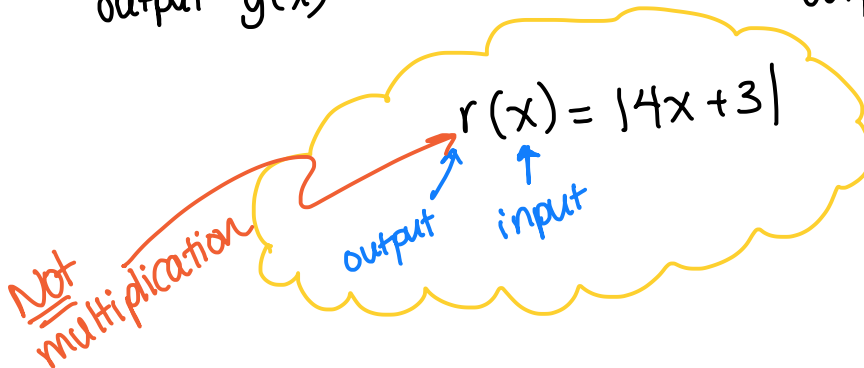
Saying: "a function of  $x$  is defined by the rule  $x^2$ "



$$r(x) = |4x + 3|$$

instead of  $y = |4x + 3|$

output  $r(x)$



If  $f(x) = 9 - 7x$ , find  $f(-3)$  and explain what the result means.

input →  $f(x) = 9 - 7x$  → output

output →  $f(-3)$  → input

Try to find the output when the input is  $-3$  using the rule defined by  $f(x)$ .

$$f(x) = 9 - 7x$$

$$f(-3) = 9 - 7(-3)$$

EVALUATE!

$$f(-3) = 9 + 21$$

$$f(-3) = 30$$

When the input is  $-3$ , the output is  $30$ .

If  $f(x) = 9 - 7x$ , find  $f(1.5)$  and explain what the result means.

$$f(1.5) = 9 - 7(1.5)$$

$$f(1.5) = 9 - 10.5$$

$$f(1.5) = -1.5$$

output →  $f(1.5)$  → input

When the input is  $1.5$ , the output is  $-1.5$ .

If  $f(x) = 9 - 7x$ , find  $x$  when  $f(x) = -12$  and explain what the result means.

$$-12 = 9 - 7x$$

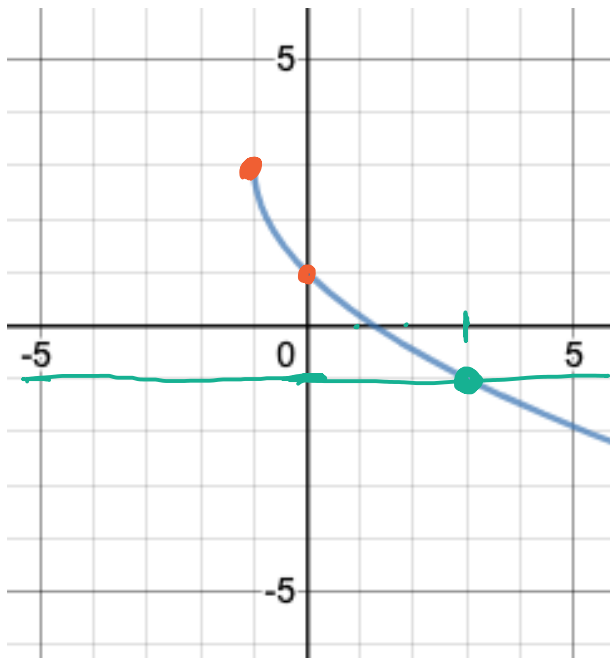
$$-21 = -7x$$

$$3 = x$$

input →  $x$  → output →  $f(x) = -12$

When the output is  $-12$ , the input is  $3$ .  
( $3, -12$ )

Given the function,  $g(x)$ , below, determine:



output (y) →  $g(-1)$  → input (x)

$$g(-1) = 3$$

output (y) →  $g(0)$  → input (x)

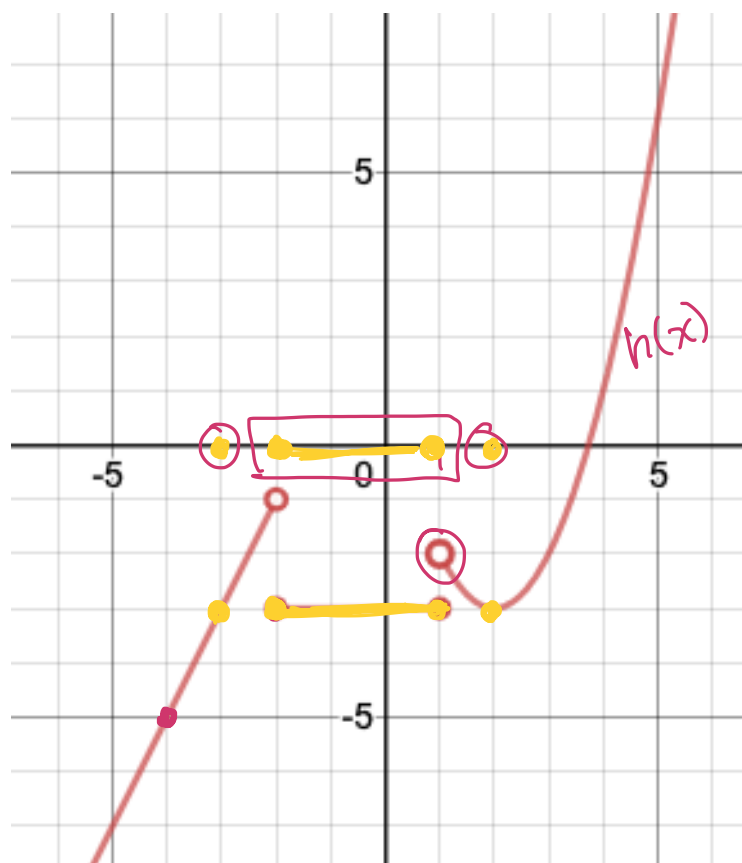
$$g(0) = 1$$

Find  $x$  when  $g(x) = -1$

output (y)

$$x = 3$$

Is the relation below a function?



VLT

Yes, this is a function because it passes the Vertical Line Test.

Find:

$h(-4)$

input (x)

$h(-4) = -5$

$h(-2)$

$h(-2) = -3$

$h(1)$

$h(1) = -3$

Determine  $x$  when  $h(x) = -3$ .

output (y)

$x = -3, -2 \leq x \leq 1, x = 2$