

What is a function?

Relation: a set of ordered pairs

Function: each input has exactly 1 output

Domain: x-values; input

Range: y-values; output

Vertical line test

\* can only touch one point on the vertical line at a time.



Function notation

$f(x) = y$  "f of x"

\* machine

\* one output

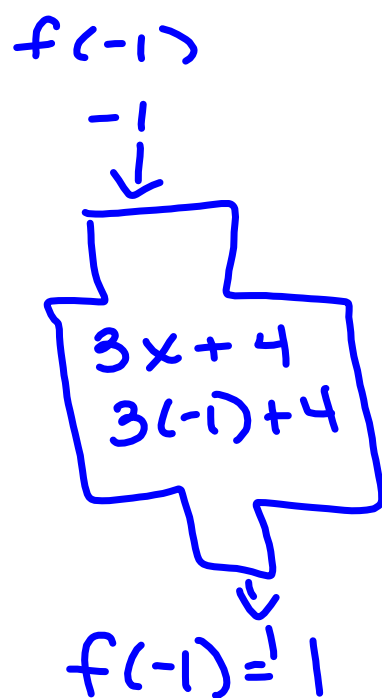
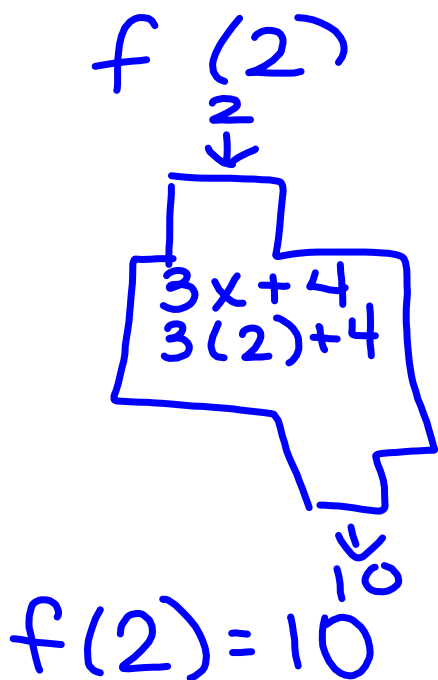
\* every input

name of the function  $f(x) = 3x + 4$  tells what number to plug into the function

$f(x)$   $3x + 4$

the function

$f(x)$  means the output of the function  $f$  when the input is  $x$ . ( $y$ )



$$f(3) = (3)^2 + 3 =$$

$$f(3) = 12$$

$$g(3) = 3 + 1$$

$$g(3) = 4$$

$$f(-2) = (-2)^2 + 3$$

$$f(-2) = 7$$

$$g(0) = 0 + 1$$

$$g(0) = 1$$

$$* f(2) + g(1) = 9$$

$$f(2) = (2)^2 + 3 = 7$$

$$g(1) = 1 + 1 = 2$$

$$* g(-1) + f(1) = 4$$

$$g(-1) = x + 1 = 0$$

$$f(1) = x^2 + 3 = 4$$

$$f(y) = y^2 + 3$$

$$g(w) = w + 1$$

$$f(x) + g(x)$$

$$(4x - 7) + (5x^2 + 8x - 9)$$

$$4x - 7 + 5x^2 + 8x - 9$$

$$5x^2 + 12x - 16$$

$$f(x) - g(x)$$

$$(4x - 7) - (5x^2 + 8x - 9)$$

$$\textcircled{4x} - \textcircled{7} - 5x^2 - \textcircled{8x} + \textcircled{9}$$

$$-5x^2 - 4x + 2$$

$$g(x) - f(x)$$

$$(5x^2 + 8x - 9) - (4x - 7)$$

$$5x^2 + 8x - 9 - 4x + 7$$

$$5x^2 + 4x - 2$$

$$2f(x) + 3g(x)$$

$$2(4x - 7) + 3(5x^2 + 8x - 9)$$

$$8x - 14 + 15x^2 + 24x - 27$$

$$15x^2 + 32x - 41$$