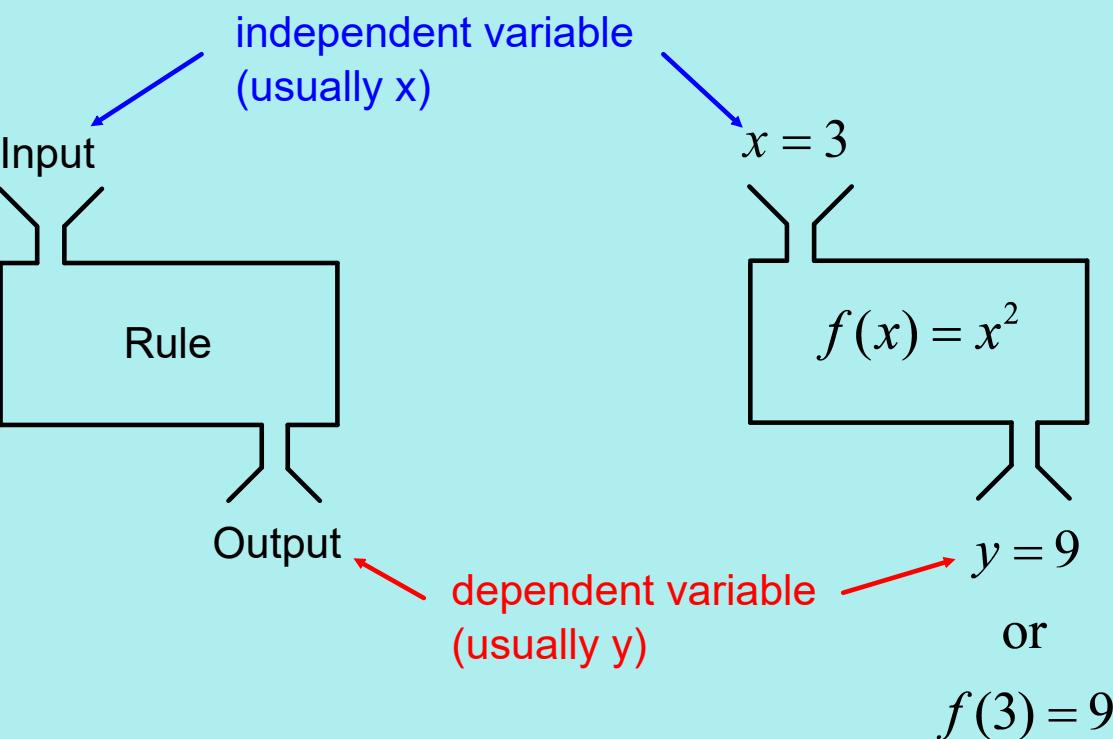


## Function Notation

### Key Concepts:

- only functions (one y for each x, vertical line test) can be represented using function notation
- x-y notation vs function notation, compare & contrast
- function represents value of dependent variable (y) for various values of the independent variable (x)
- any combination of letters possible
  - > frequently see  $f(x)$ ,  $g(x)$ ,  $h(x)$
  - >  $h(t)$ ,  $d(t)$ ,  $T(h)$ ,  $V(r)$ , etc.
- input-output relationship, function as a machine

Jul 5-10:19 PM



Jul 7-7:37 PM

Recall:

A function is a special type of relation where each value of x yields only a single value of y.

For example:

- (1) Set Notation: No x-value is repeated
- (2) Graph: If any vertical line passes through more than one point on the graph of a relation, it is not a function. This is known as the vertical line test.
- (3) Equation: Rearrange for y and ensure there is only a single value.

Feb 21-9:54 PM

## Function Notation

Sept 5/2019

The equation of a relation which is a function can be written using a special notation, **function notation**.

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

"the result depends on x and is defined as  $3x + 2$ "

On a graph, the y-axis is used to represent the value of the function, which we write as

$$y = f(x)$$

"the variable y is a function of the variable x"

Feb 21-10:47 PM

<u>x-y notation</u>	<u>function notation</u>	
$y = 3x + 2$	$f(x) = 3x + 2$	
sub $x = 1$ : $y = 3(1) + 2$ = 5	$f(1) = 3(1) + 2$ $f(1) = 5$	
Ex. If $f(x) = 3x + 2$ , evaluate:	$f(2) \rightarrow \text{mars}$	
a) $f(5) + 2$ $= 3(5) + 2 + 2$ = 19	b) $3f(-1)$ $= 3[f(-1)]$ $= 3[3(-1) + 2]$ $= 3[-1]$ = -3	c) $-f(2a) + 4$ $f(2a)$ $= 3(2a) + 2$ $= 6a + 2$ $-f(2a) + 4$ $= -[6a + 2] + 4$ $= -6a - 2 + 4$ $= -6a + 2$

Feb 21-10:47 PM

<u>x-y notation</u>	<u>function notation</u>
$y = 3x + 2$	$f(x) = 3x + 2$
sub $x = 1$ : $y = 3(1) + 2$ = 5	$f(1) = 3(1) + 2$ = 5

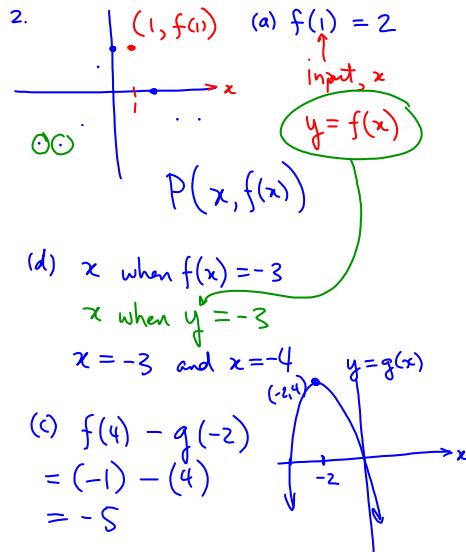
Ex. If  $f(x) = 3x + 2$ , solve:

a)  $f(x) = -4$       b)  $f(2a) = 14$

Feb 21-10:47 PM

Assigned Work:				
$f(x)$	$x$	$x^2$	$\sqrt{x}$	$\frac{1}{x}$
$5f(a)$				
$-f(a)$				
$f(a)+4$				
$f(a)-6$				
$f(a+2)$				

17b, 5d, 19, 16, 2, 6b



Feb 10-10:23 PM

5d, 6b

$$5(d) \quad f(x) = \frac{1}{2x}$$

$$f\left(\frac{1}{4}\right) = \frac{1}{2\left(\frac{1}{4}\right)}$$

$$= \frac{1}{\frac{1}{2}}$$

$$= 2$$

$$f\left(\frac{1}{4}\right) + f\left(\frac{3}{4}\right)$$

$$= 2 + \frac{2}{3}$$

$$= \frac{8}{3}$$

$$f\left(\frac{3}{4}\right) = \frac{1}{2\left(\frac{3}{4}\right)}$$

$$= \frac{1}{\frac{3}{2}}$$

$$= \frac{2}{3}$$

$$6(b) (iii) \quad f(5-3)$$

$$= f(2)$$

$$= 5$$

Sep 6-12:50 PM

16, 17b, 19

$$16. \ f(x) = x^2 + 2x - 15$$

$$(a) \ f(x) = 0$$

$$0 = x^2 + 2x - 15$$

$\uparrow$        $\uparrow$

M -15

A 2

N 5, -3

$$0 = (x+5)(x-3)$$

$$0 = A \cdot B$$

$$x+5=0 \quad x-3=0$$

$$x=-5 \quad x=3$$

Sep 6-12:56 PM

17b.

$$f(x) = 3x + 1 \quad g(x) = 2 - x$$

$$f(a^2) = g(za)$$

$$f(a^2) = 3a^2 + 1$$

$$3a^2 + 1 = 2 - za$$

$$g(za) = 2 - za$$

$$3a^2 + 2a - 1 = 0$$

M -3

A 2

N 3, -1

Sep 6-1:02 PM

19.  $f(x)$  is linear  $f(x) = mx + b$

$$f(285) = 200 \quad f(75) = 60$$

$$m(285) + b = 200 \quad m(75) + b = 60$$

$$285m + b = 200 \quad 75m + b = 60$$

①                            ②

Sep 6-1:05 PM

## Attachments

---

Untitled 2.mml