

Goal:

- to understand and use function notation

↳ way of  
writing things

**Function notation** is used to convey more information using fewer symbols.

Instead of writing

$$y=2x-1$$

or

$$y=-3x^2$$

$$y=f(x)$$

we would write....

$$f(x)=2x-1$$

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

read:  $f$  of  $x$

means: function depending  
on  $x$

this immediately tells us that the rule describes a **function**.

Note: It does not mean  $f$  times  $x$

But wait there's more...

Function notation also shows when a specific value is being used for  $x$ .

Ex:

Without function notation	With function notation
$y=2x-1$ $x=1$ $y=2(1)-1$ $y=1$ (1,1)	$f(x)=2x-1$ $f(1)=2(1)-1$ $f(1)=1$ (1,1)
$x=3$ $y=2(3)-1$ $y=5$ (3,5)	$f(3)=2(3)-1$ $f(3)=5$ (3,5)
$x=-2$ $y=2(-2)-1$ $y=-5$ (-2,-5)	$f(-2)=2(-2)-1$ $f(-2)=-5$ (-2,-5)

Function notation shows both the  $x$ - and  $y$ -coordinate

Ex: Using the function  $f(x) = -4x^2$ ,

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a) evaluate  $f(2)$

$$f(2) = -4(2)^2$$

$$f(2) = -4(4)$$

$$f(2) = -16$$

b) evaluate  $f(0)$

$$f(0) = -4(0)^2$$

$$f(0) = 0$$

c) solve  $f(x) = -100$

$$(y = -100)$$

$$x = ?$$

$$\frac{-100}{-4} = \frac{-4x^2}{-4}$$

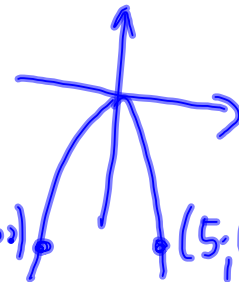
$$\sqrt{25} = \sqrt{x^2}$$

$$x = \pm 5$$

d) find the zero(s) of  $f(x)$

$$\hookrightarrow (x\text{-int}, y=0, f(x)=0)$$

$$(-5, -100) \quad (5, -100)$$



$$\frac{0}{-4} = \frac{-4x^2}{-4}$$

$$\sqrt{0} = \sqrt{x^2}$$

$$0 = x$$

## Handout

a) Evaluate  $f(-6)$   $y=?$   
 $x=-6$

$$f(-6) = 0$$

b) Evaluate  $f(4)$  (What is  $y$ -word.  
when  $x=4$ ?)

$$f(4) = 4$$

d) zeros?  $f(x) = 0$  (What is  
 $x$  when  $y=0$ ?)

f) initial value?  $f(0)$  (What is  
 $y$  when  $x=0$ ?)