

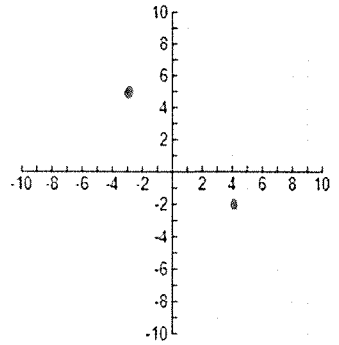
## Function form of an equation

- A way to name a function
- $f(x)$  is a fancy way of writing "y" in an equation.
- Pronounced "f of x"

Using Function Notation to plot a point

$$f(-3) = 5$$

$$f(4) = -2$$



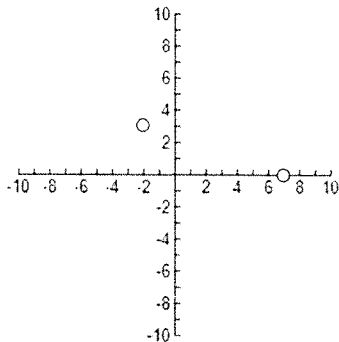
Write the coordinate point in function notation

$$(-2, 3)$$

$$f(-2) = 3$$

$$(7, 0)$$

$$f(7) = 0$$



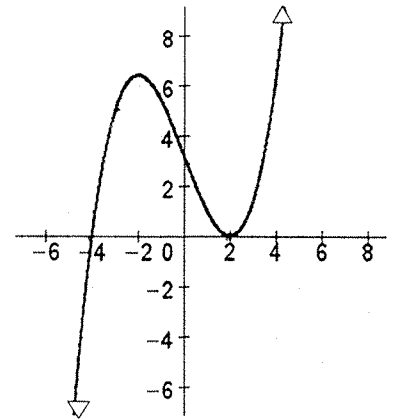
To evaluate from a graph: Use the **x** to find the **y value** on the given graph

$$f(-4) = 0$$

$$f(-3) = 5$$

$$f(0) = 3$$

$$f(2) = 0$$



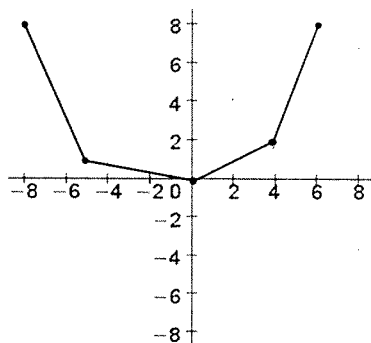
To evaluate from a graph: Use the **x** to find the **y value** on the given graph

$$f(-8) = 8$$

$$f(0) = 0$$

$$f(4) = 2$$

$$f(6) = 8$$



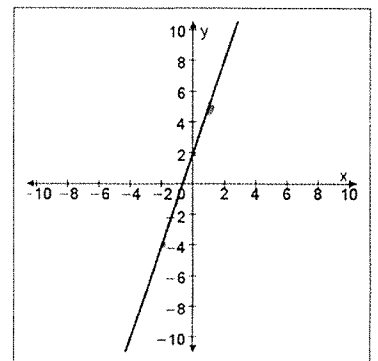
## Function Notation (Graph)

$$f(-2) = \underline{-4}$$

$$f(0) = \underline{2}$$

$$\text{If } f(x) = -4, x = \underline{-2}$$

$$\text{If } f(x) = 5, x = \underline{1}$$



## Function Notation (Table)

$f(-1) = \underline{3}$

$f(4) = \underline{6}$

$\text{If } f(x) = 3, x = \underline{-1}$   
 $f(-1) = 3$

$\text{If } f(x) = 0, x = \underline{2}$   
 $f(2) = 0$

x	y
-1	3
0	5
1	8
2	0
3	-4
4	6

## Function Notation (Combined)

Find:

$f(-2) = \underline{4}$

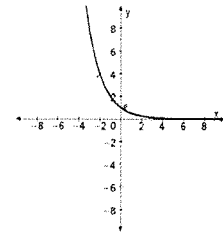
$g(0) = \underline{-3}$

$\text{If } f(x) = 1, x = \underline{0}$   
 $f(0) = 1$

$\text{If } g(x) = 0, x = \underline{2}$   
 $g(2) = 0$

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

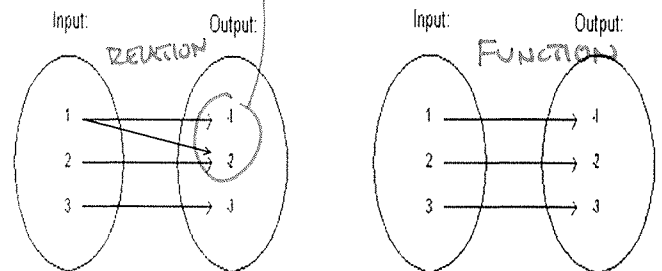
$g(x)$



x	g(x)
-2	4
-1	7
0	-3
1	1
2	0

RELATION	FUNCTION
1) Any set of ordered pair	1) A relation where <b>EACH</b> input (x) has <b>EXACTLY ONE</b> output(y)
2) No other special rules	<p><b>Meaning:</b> Y's can repeat but X's cannot</p> <p>2) In graphs, Must pass vertical line test</p> <p><b>Meaning:</b> If you draw a vertical line through the graph and it hits the vertical line twice, it is <b>NOT</b> a function.</p>

## Function or Relation?



## State the domain and range

$D: \{1, 2, 3\}$

$R: \{-1, -2, -3\}$

$D: \{1, 2, 3\}$

$R: \{-1, -2, 3\}$

## Function or Relation? And state the domain and range

$\{(1, 1), (-2, 3), (5, 1), (6, 2), (8, -4), (-1, 5)\}$

$D: \{1, -2, 5, 6, 8, -1\}$  OR IN ORDER  $\{-2, -1, 1, 5, 6, 8\}$

$R: \{1, 3, 1, 2, -4, 5\}$  OR IN ORDER  $\{-4, 1, 2, 3, 5\}$

**FUNCTION!** NO REPEATING X VALUES

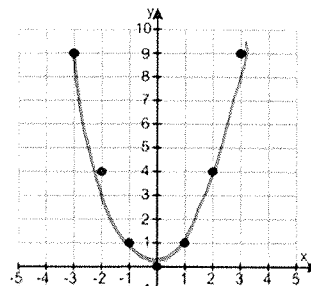
$\{(2, 5), (-2, 3), (5, 7), (-2, 9), (4, 5), (-8, 7)\}$

**RELATION!** -2 GOES TO 3 AND 9

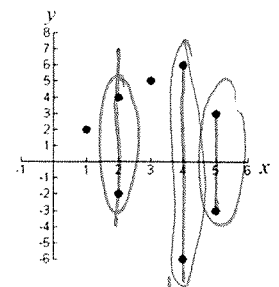
$D: \{2, -2, 5, -2, 4, -8\}$  OR  $\{-8, -2, 2, 4, 5\}$

$R: \{5, 3, 7, 9, 5, 7\}$  OR  $\{3, 5, 7, 9\}$

## Function or Relation?



**FUNCTION!**  
PASSES VERTICAL LINE TEST



**RELATION.**  
FAILS VERTICAL LINE TEST