

UNIT 6 - STUDY GUIDE – FUNCTIONS

Relation: is a set of ordered pairs- coordinates (x,y)

Domain: is the set of all the 1st elements (**x-values**)
-independent variable –input

Range: is the set of all the 2nd elements (**y-values**)
-dependent variable-output

{ (1,2), (3,4), (5,6) } Domain { 1, 3, 5 }

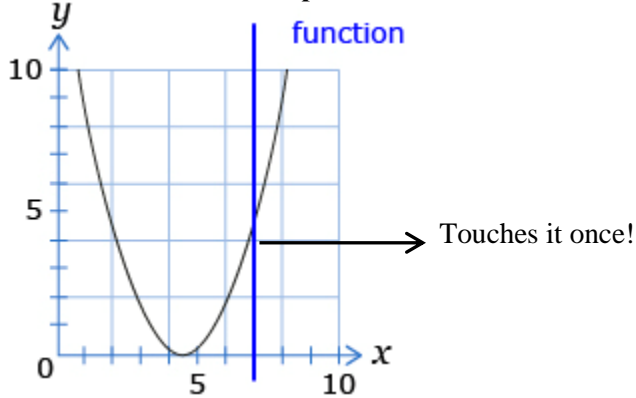
{ (1,2), (3,4), (5,6) } Range { 2, 4, 6 }

A **Function** is a relation in which **no two ordered pairs** have the same 1st element (x-value)

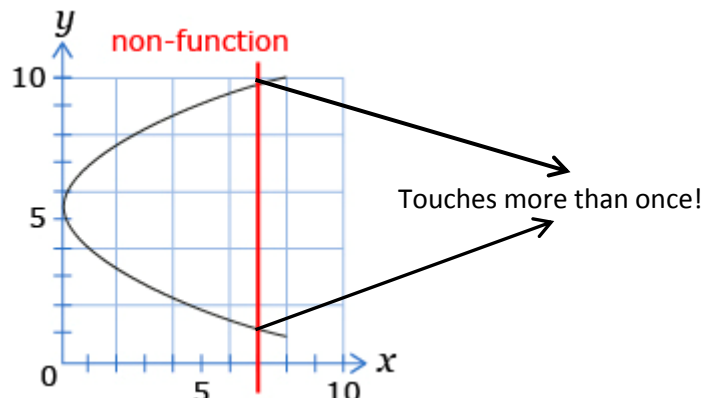
- The x-values DO NOT repeat
- It passes the vertical line test

Vertical Line Test: If any vertical line passes through more than one point of the graph, then that relation is not a function.

It's a function because it passes the V.L.T!



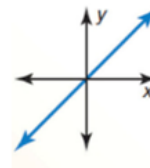
Not a function because it fails the V.L.T!



FOUR TYPES OF FUNCTIONS

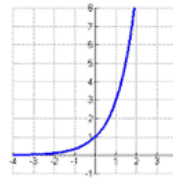
1. LINEAR

$$f(x) = \underline{mx+b}$$



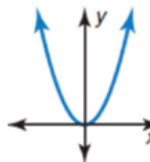
2. EXPONENTIAL

$$f(x) = \underline{ab^x}$$



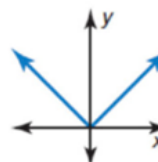
3. QUADRATIC

$$f(x) = ax^2+bx+c$$



4. ABSOLUTE VALUE

$$f(x) = |x|$$



FUNCTION NOTATION

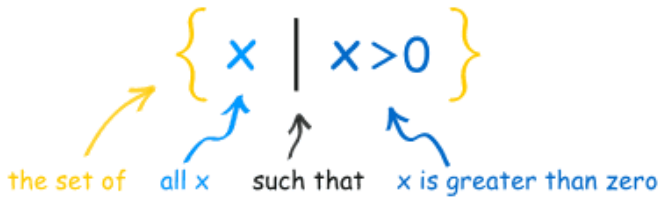
** $f(x)$ just means y !

$f(\#)$ \rightarrow plug # in for x

$f(x)$ \rightarrow plug # in for y

Algebraically Evaluating	Graphically Evaluating
<p>Given: The function $f(x) = x + 3$</p> <p>a) Find $f(2)$ $y = (2) + 3$ $y = 5$</p> <p>b) Find x when $f(x) = 7$ $7 = x + 3$ $-3 = -3$ $4 = x$</p>	<p>Given this graph of the function $f(x) = x + 3$ Find the following:</p> <p>a) $f(-1)$ \downarrow means $x = -1$ $y = 2$</p> <p>b) x when $f(x) = 0$ \downarrow means $y = 0$ $x = -3$</p> <div style="text-align: right;"> </div> <p>** Given x-value: looking for y (up/down) ** Given y-value: looking for x (left/right)</p>

Set Builder Notation



Interval Notation

$$(0, \infty)$$

$$() (-\infty, \infty) < >$$

$$[] (-\infty, \infty) \leq \geq$$

Examples

