

# What is a Function?

November-02-17 10:36 AM

\* A function is a special type of relation where each output ( $y$ ) has exactly one unique input ( $x$ ).  
(can't have 2  $x$  values that are the same!)

Ex. Are the following functions?

a)

x	y
0	2
1	4
2	6
3	8

Yes.  
Because all  $x$ 's are diff.

b)

x	y
1	10
2	10
3	10

Yes, because all  $x$  are diff.

c)

x	y
10	1
11	2
10	3
12	4

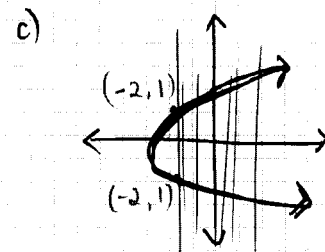
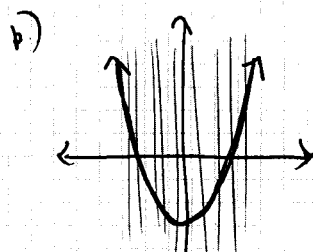
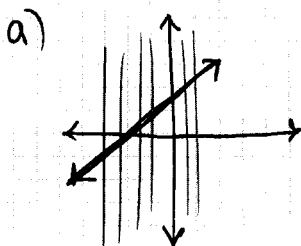
ND not a function because 2  $x$ 's are the same.

To determine if a graph is a function we use the "Vertical Line Test"

\* Imagine you can draw an infinite number of vertical lines across the  $x$ - $y$  grid.

- To pass the test (and be a function) each vertical line can only cross the relation once.
- If any of the vertical lines cross more than once it fails the test (NOT a function).

Ex. Is this a function?





Yes each  
line intersects  
exactly once.

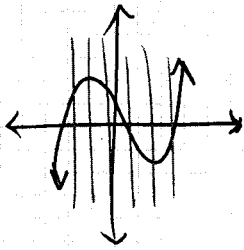


Yes.



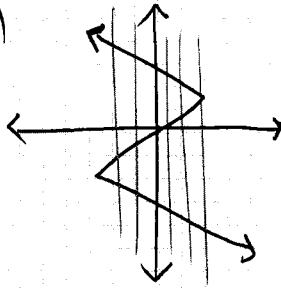
No fails vert line  
test

d)



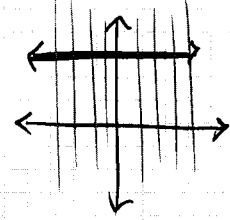
Yes

e)



No

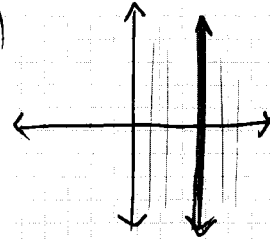
f)



$y = 3$

Yes.

g)



$x = 3$

No. It  
intersects  
everywhere.