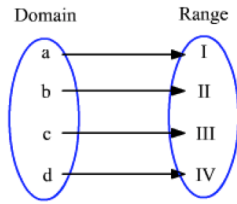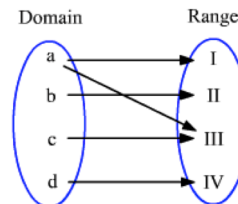# FUNCTIONS

IS IT A FUNCTION?

A function, in mathematics, is a relationship between a set of inputs and a set of outputs with the limitation that each input is related to exactly one output.

FUNCTION   NOT A FUNCTION

TABLES

The table below can be defined as a function because there is only one *y* value for each *x* value.

x	-1	0	2	5	3
y	13	6	3	-1	-2

However, the table below is not a function because there is more than one *y* value for a given *x* value. Notice that for x = -1, we have two *y* vaues, 13 & -2. Hence, this graph is NOT a function.

x	-1	0	2	5	-1
y	13	6	3	-1	-2

Now you try. Determine whether each table is a function or not.

1.

x	5	0	2	-3	-6	0
y	7	-4	3	-1	-2	2

2.

| x	-3	-2	4	-1	2	0
y	7	-4	3	-1	-2	1

VERTICAL LINE TEST

We can use the **vertical line test** to determine if a graph is a function. The vertical line test is a visual way to determine if a graph is a function or not. Again, a function can only have one output, y, for each unique input, x. By drawing a vertical line through a graph, we can see how many times the vertical line crosses the graph. If the vertical line crosses the graph only once, the graph is a function. If the vertical line crosses the graph more than once, the graph is NOT a function.

Example:

one point of intersection

FUNCTION

intersecting at two points
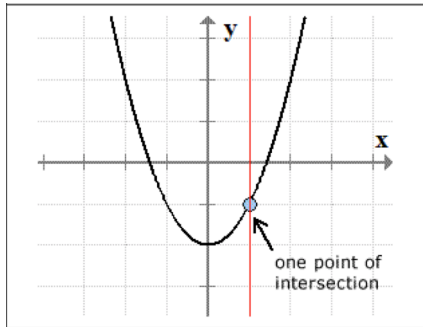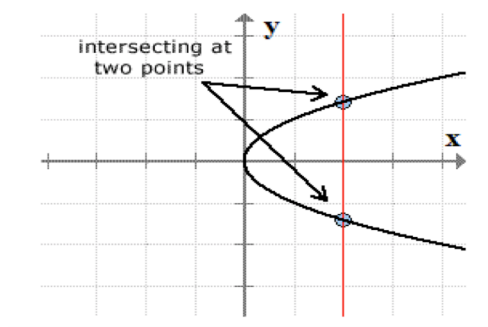
NOT A FUNCTION

Now you try. State whether or not the graphs below are functions by using the *vertical line test*.