

* Theory :

* Function :

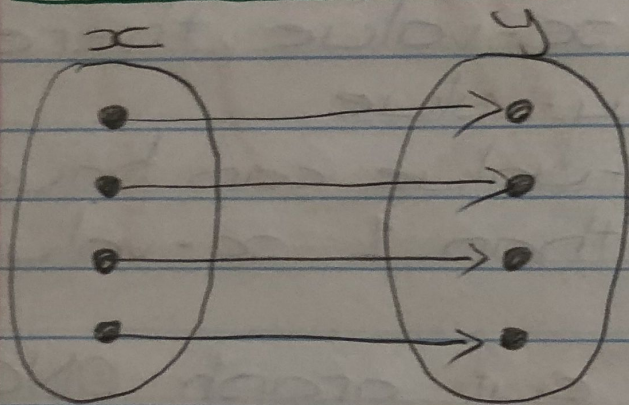
- Definition: for each x -value, there is only 1 y -value.
{but 1 y -value can have more than 1 x -value.
- Vertical line test:
 - vertical line will cut graph ONCE if it's a function.

* One-to-one function :

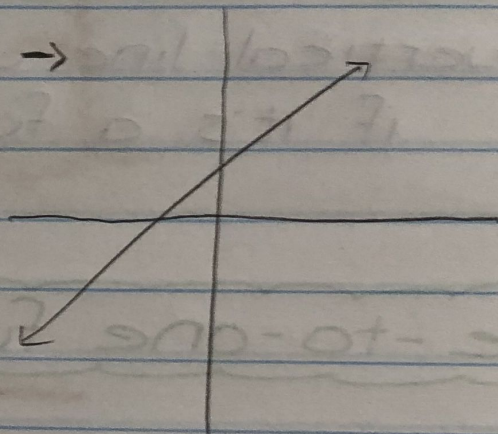
- Definition: each x -value has only 1 y -value AND: each y -value has only 1 x -value
- Vertical and horizontal line test:
 - both vertical and horizontal line will only cut once!
- Inverse function will only exist if the original function is one-to-one.

*Types of mapping of functions.

* One-to-one:



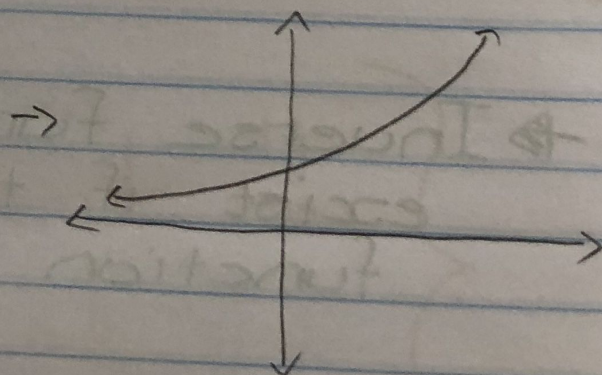
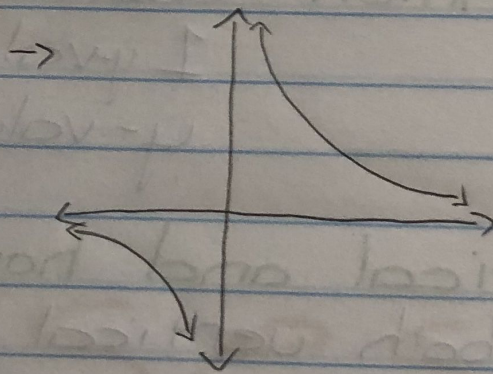
- each x -value gives only 1 y -value.



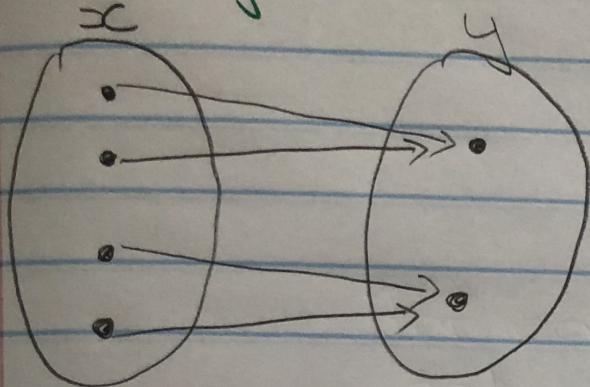
∴ Straight line

Hyperbola

Exponential

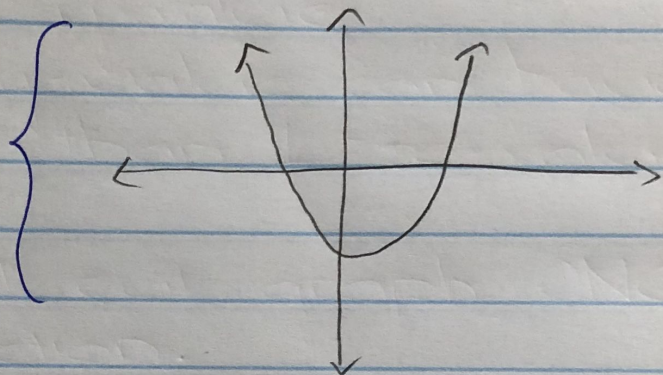


* Many - to - one

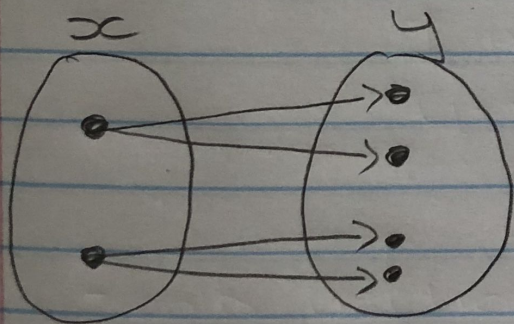


→ more than one x -value gives the same y -value.

∴ Parabola

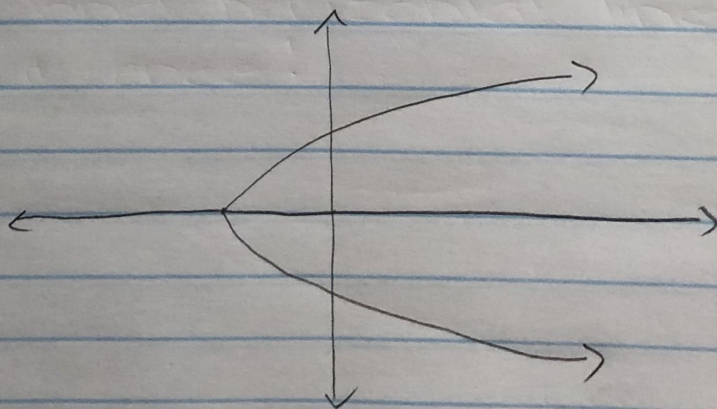


* One - to - many



→ one x -value gives more than one y -value

This is parabola reflected in line $y = x$
{ We will get to these in a bit }



Examples:

- i) Consider the ordered pairs of numbers in each set.
What type of mapping do they represent?
(Also write the domain and range of each set)

a) $\{(3;6), (3;4), (-4;2)\}$

b) $\{(0;5), (-4;3), (7;5)\}$

c) $\{(3;4), (5;8), (9;12)\}$

2) For each of graphs below, state whether relation is a function or not. Write the domain and range of each graph.

a)

