Objective 1: Graphs of Functions.
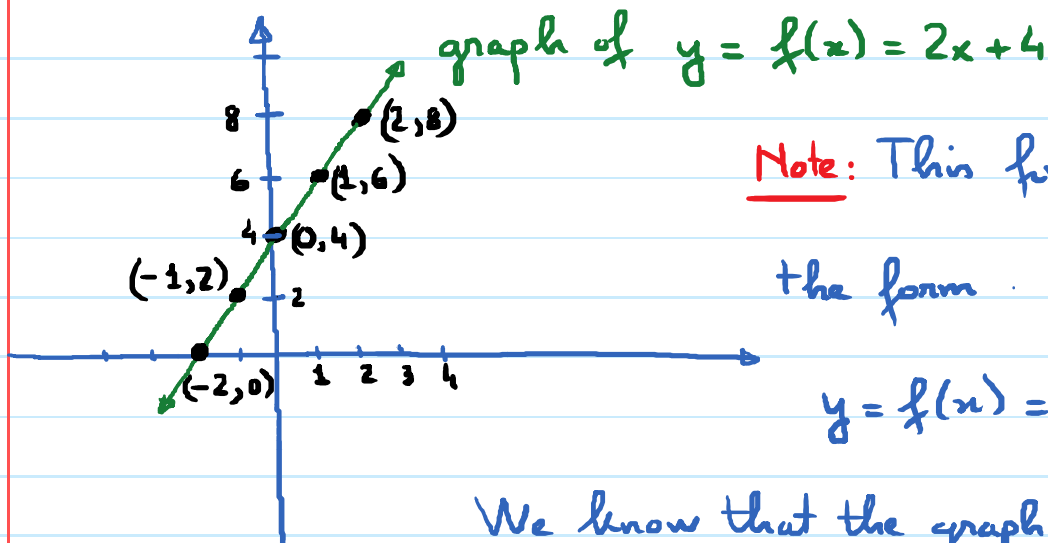
Definition: The graph of a function is the graph of its ordered pairs.

E.g. $f(x) = 2x + 4$

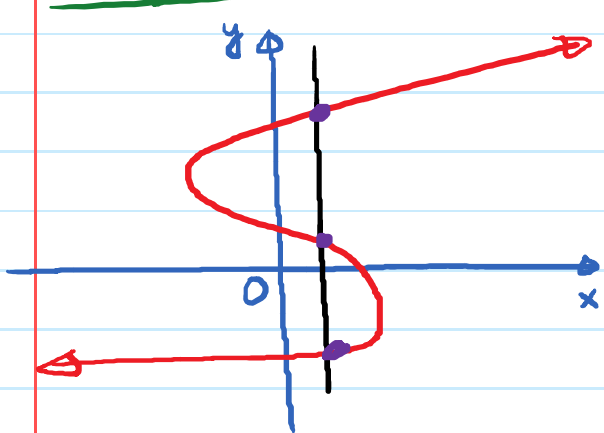| x	$y = f(x) = 2x + 4$	Ordered pair (x, y)
-2	0	(-2, 0)
-1	2	(-1, 2)
0	4	(0, 4)
1	6	(1, 6)
2	8	(2, 8)

graph of $y = f(x) = 2x + 4$

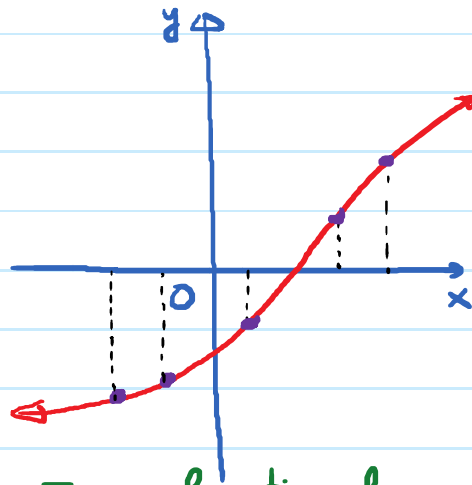**Note:** This function has the form

$$y = f(x) = mx + b$$

We know that the graph of any function of this form is a straight line.
So, we really just need 2 points to sketch the graph.

Obj 2: Use the vertical line test.
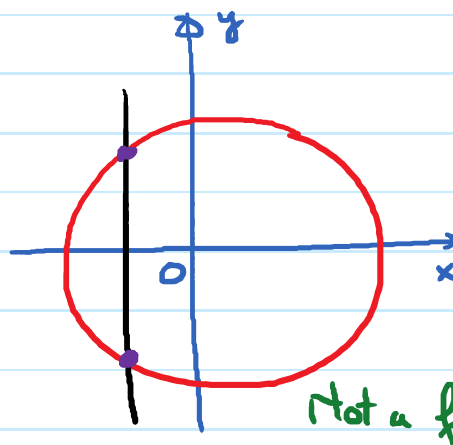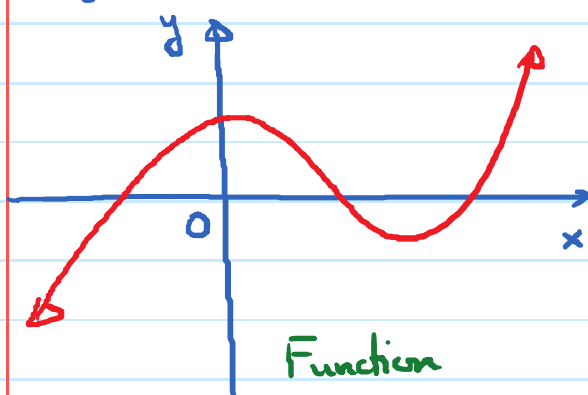
Not a function of y in terms of x

Is a function of y in terms of x

The vertical line test:

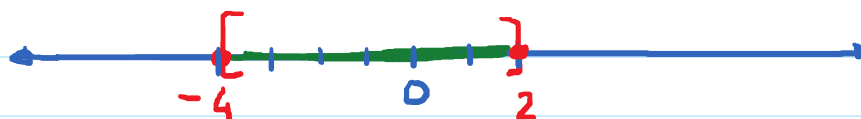If any vertical line intersects a graph in more than one point, then the graph does not define y as a function of x.

E.g.

Function

Not a function

Obj 3: Identify Domain and Range of a function from the graph.

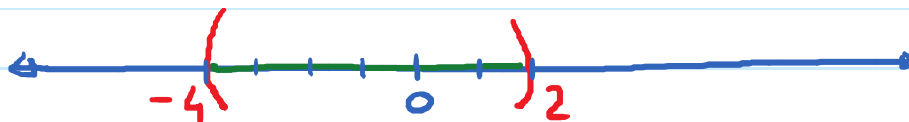**Recall:** Interval Notation:

What is the difference between $[-4, 2]$ and

$(-4, 2)$?

$[-4, 2]$: all the numbers in between -4 un 2 and

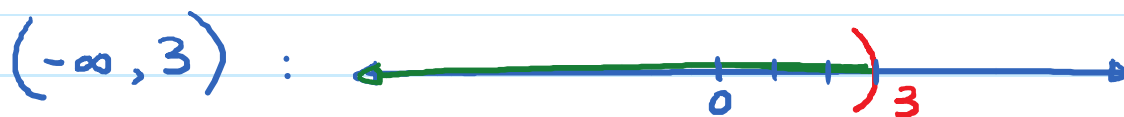including the number -4 and the number 2

$(-4, 2)$: all the numbers in between -4 and 2

and excluding -4 and 2

$[-4, 2)$: all the numbers in between -4 and 2

and including -4 and excluding 2.

$[-2, \infty)$:

all numbers $\geqslant -2$

$(-\infty, 3)$:

all numbers < 3

* Set builder notation:

$$\underbrace{[-4, 2)}_{\text{Interval notation}} = \underbrace{\{ x \mid -4 \leq x < 2 \}}_{\text{Set builder notation}}$$

* Domain and Range of a function from its graph.

graph of a function $y = f(x)$
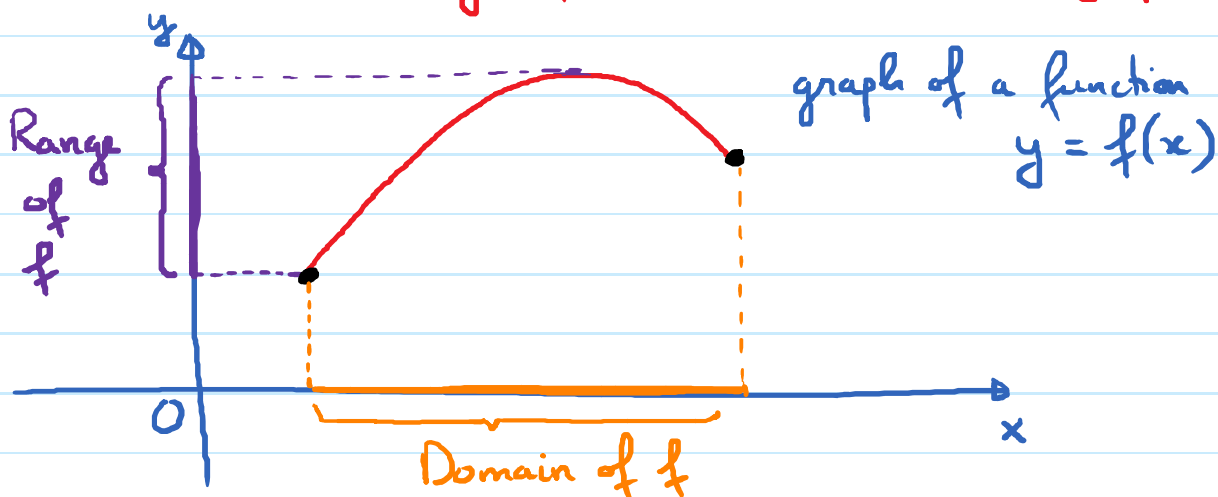
Domain: Set of inputs (found on x-axis from the x-coordinate of the leftmost point of the graph to the x-coordinate of the rightmost point of the graph)