Day 1

3rd Nov. 2025

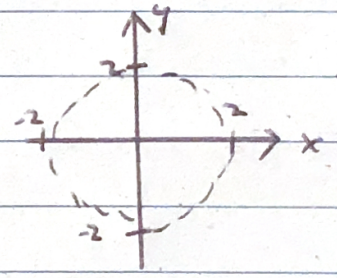
- input → [function] → output

- $f(x) = \begin{cases} x^2 \text{ if } x \text{ is even} \\ x+5 \text{ if } x \text{ is odd} \end{cases}$ | e.g $f(2) = 4$ | e.g $f(3) = 8$

- $h(a)$ = the next largest number that starts with the same letter as var a | $h(2) = 3$ | $h(8) = 11$ | $h(12) = 13$

- Equations can also be functions eg: $y = mx + c \Rightarrow y = f(x) = mx + c$

x	y	
0	1	$f(0) = 1$
1	2	$f(1) = 2$
2	3	$f(2) = 3$
		...



$x^2 + y^2 = 4$

Diagram 1.

- Diagram 1 is not a function, as it could give more than 1 possible output, eg.

$x = 1$, $1^2 + y^2 = 4 \Rightarrow 1 + y^2 = 4 \Rightarrow y^2 = 3 \Rightarrow y = \pm\sqrt{3}$
so is could be positive or negative square root of 3

- Q. The function F(x) is defined as $f(x) = 49 - x^2$
  Find value of f(5).
  $f(5) = 49 - 5^2 \Rightarrow 49 - 25 = 24$
  $\therefore f(5) = 24$

- The change of outputs eg (f(x) = x+1) f(0) = 1, f(1) = 2..
  is called rate of change