Ⓒ $x^2 + y^2 = 8.$ Same question.

$$y^2 = 8 - x^2$$

$$y = \pm\sqrt{8 - x^2}$$ $\boxed{NO}$.

Ⓓ $6x - 5y = 7$.   Same question

$$-5y = 7 - 6x$$

$$y = \frac{7 - 6x}{-5}$$ $\boxed{YES}$.

Obj 4 : Evaluate Functions

<u>Function Notation</u>: The notation $f(x)$ is read as f of x (or the value of the function f at the variable x).

f is just the name of the function

x is called the independent variable.

Note: $f(x)$ DOES NOT mean f times x.

E.g. $y = 16 - x^2$

call this $f(x)$

$$f(x) = 16 - x^2$$

Evaluate this function when $x = 4$

Notation: $\boxed{f(\boxed{4})}$; $f(-2)$

$$f(4) = 16 - (4)^2 = 16 - 16 = 0$$

$$f(4) = 0 \quad (\text{the value of } f \text{ at } x = 4 \text{ is } 0)$$

$$f(-2) = 16 - (-2)^2 = 16 - 4 = 12$$

$$f(h) = 16 - h^2$$

In the formula, $f(x) = 16 - x^2$, x is a placeholder.

It is a placeholder for any value we evaluate the function at.

E.g. Given $g(x) = x^2 + 2x + 3$.

Evaluate the following and simplify.

(a) $g(-4)$

(c) $g(2h)$

(b) $g(h)$

(d) $g(h + a)$

(e) $g(x + 1)$

(f) $g(-x)$

$$g(x) = x^2 + 2x + 3$$

(a) $g(-4) = (-4)^2 + 2 \cdot (-4) + 3 = 16 - 8 + 3$
$$= \boxed{11}$$

(b) $g(h) = h^2 + 2h + 3$

(c) $g(2h) = (2h)^2 + 2 \cdot (2h) + 3$
$$= \boxed{4h^2 + 4h + 3}$$

(d) $g(\boxed{h+a}) = (h+a)^2 + 2(h+a) + 3$
$$= (h+a)(h+a) + 2h + 2a + 3$$
$$= h^2 + 2ah + a^2 + 2h + 2a + 3$$

(e) $g(\boxed{x+1}) = (x+1)^2 + 2(x+1) + 3$
$$= (x+1)(x+1) + 2x + 2 + 3$$
$$= x^2 + 2x + 1 + 2x + 5$$

$$g(x+1) = x^2 + 4x + 6$$

(f) $g(\boxed{-x}) = (-x)^2 + 2(-x) + 3$

$g(-x) = x^2 - 2x + 3$

Obj 5: Graph functions by plotting points

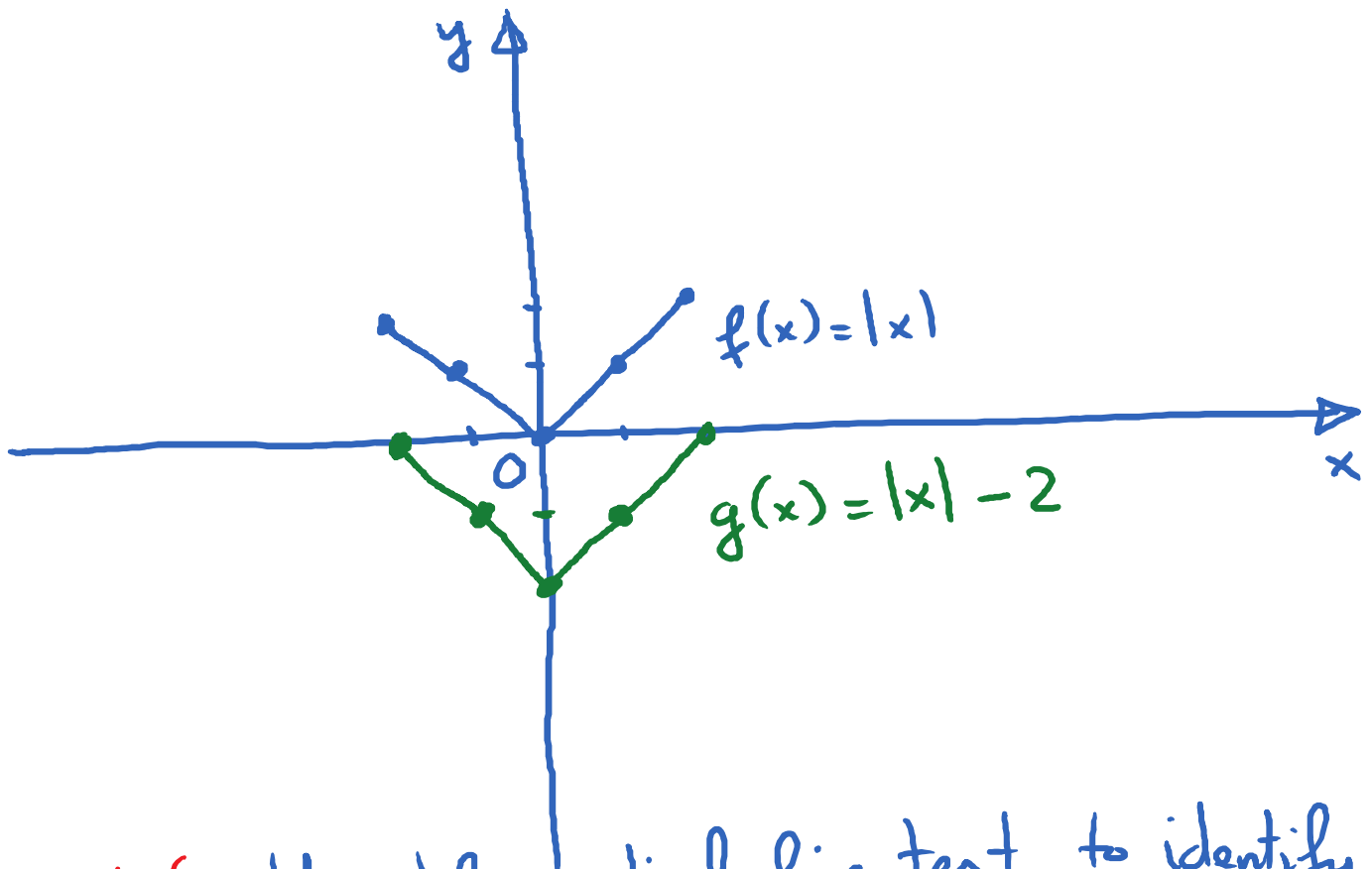Definition: The graph of a function is the graph of its ordered pairs.

E.g. Graph the functions $f(x) = |x|$

and $g(x) = |x| - 2$ in the same coordinate plane. Choose integer values of x starting with -2 and ending with 2.

$f(x) = |x|$

x	$f(x)$	
-2	2	$\rightarrow (-2,2)$
-1	1	$\rightarrow (-1,1)$
0	0	$\rightarrow (0,0)$
1	1	$\rightarrow (1,1)$
2	2	$\rightarrow (2,2)$

$g(x) = |x| - 2$

x	$g(x)$	
-2	0	$\rightarrow (-2,0)$
-1	-1	$\rightarrow (-1,-1)$
0	-2	$\rightarrow (0,-2)$
1	-1	$\rightarrow (1,-1)$
2	0	$\rightarrow (2,0)$

$f(x) = |x|$

$g(x) = |x| - 2$

Obj # 6: Use the vertical line test to identify graphs of functions

NOT a function.
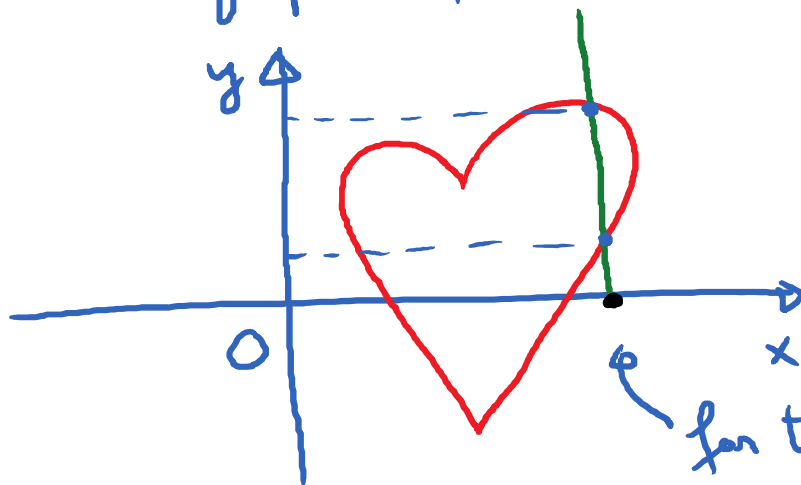
for this value of x, we get 2 values of y.