

## 2.1 Cont'd

p1

### Graphing equations in two variables

An equation in 2 variables expresses a relation between two quantities.

Eq.  $y = x^2 + 1$

A point  $(x, y)$  satisfies the eq<sup>n</sup> if it makes the eq<sup>n</sup> true when plugged in.

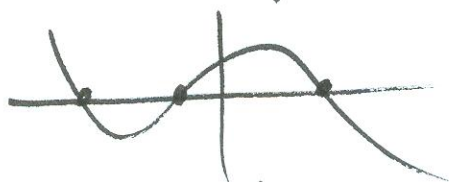
$(1, 2)$  satisfies the eq<sup>n</sup>

$(2, 1)$  does not satisfy the eq<sup>n</sup>.

The graph of an eq<sup>n</sup> in 2 variables is the set of points whose coordinates satisfy the eq<sup>n</sup>

### Intercepts.

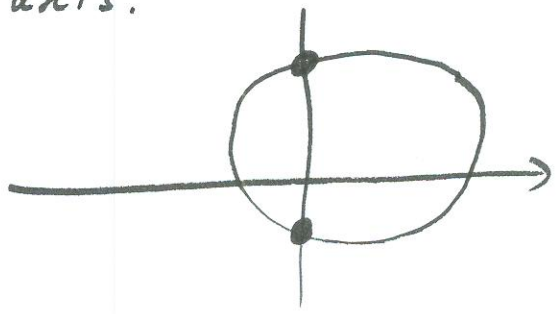
An x-intercept of an equation is the x-coordinate of a point the graph intersects the x-axis



### To find the x-intercepts

- 1 - put  $y = 0$  in eq<sup>n</sup>
- 2 - Solve with respect to  $x$ .

A y-intercept is the y coordinate of a point where the graph intercept the y-axis.



To find the y-intercept

1. Put  $x=0$  in eq<sup>n</sup>.
2. Solve for  $y$ .

Exp Find the x-int & the y-int of

1.  $y = x^2 - 3$

2.  $2x^2 + (y-1)^2 = 4$

1. x-int,  $y=0 \Rightarrow 0 = x^2 - 3 \Rightarrow x^2 = 3$

$x = \pm\sqrt{3}$

y-int

$x=0 \Rightarrow y = 0 - 3 \Rightarrow y = -3$

2. x-int  $2x^2 + (0-1)^2 = 4 \Rightarrow x^2 = \frac{3}{2}$

$x = \pm\sqrt{\frac{3}{2}} = \pm\frac{\sqrt{6}}{2}$

y-int

$2(0)^2 + (y-1)^2 = 4 \Rightarrow y-1 = \pm 2$   
 $y = 3$  or  $y = -1$

# Graphing Equations by plotting.

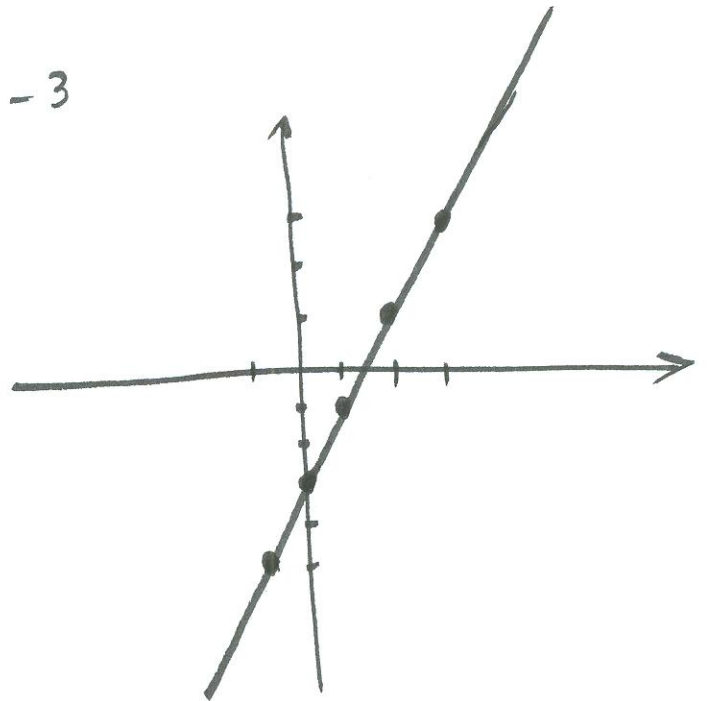
We draw many points of the graph & connect by a smooth curve.

Exp Sketch the graphs of

- a)  $2x - y = 3$                       d)  $y = \sqrt{x}$
- b)  $y = |x|$                               e)  $y = x^3$
- c)  $y = x^2 - 2$

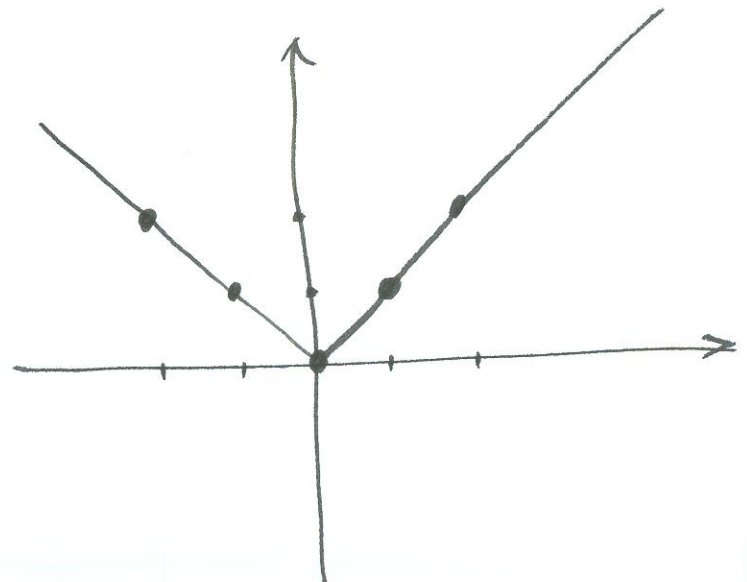
a)  $2x - y = 3 \Rightarrow y = 2x - 3$

$x$	$y = 2x - 3$	$(x, y)$
-1	-5	(-1, -5)
0	-3	(0, -3)
1	-1	(1, -1)
2	1	(2, 1)
3	3	(3, 3)



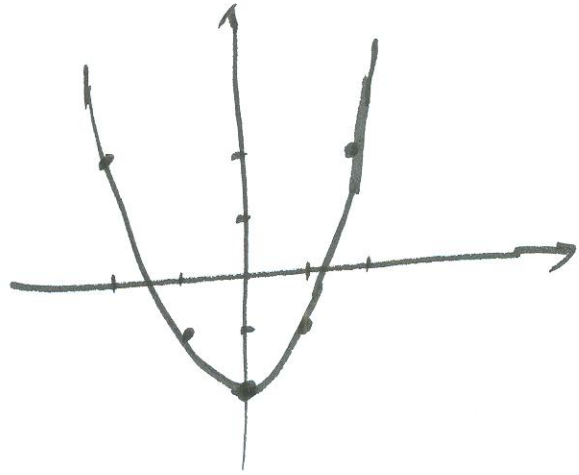
b)  $y = |x|$

$x$	$y =  x $	$(x, y)$
-2	2	(-2, 2)
-1	1	(-1, 1)
0	0	(0, 0)
1	1	(1, 1)
2	2	(2, 2)

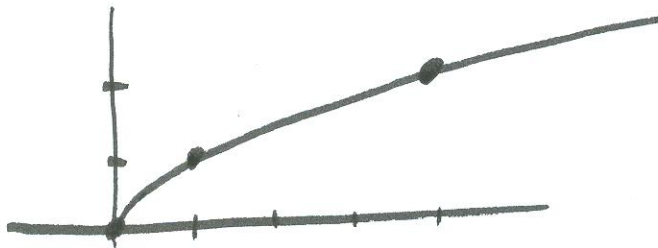


c)  $y = x^2 - 2$

x	$y = x^2 - 2$	
-2	2	$(-2, 2)$
-1	-1	$(-1, -1)$
0	-2	$(0, -2)$
1	-1	$(1, -1)$
2	2	$(2, 2)$



d)



e)

