# Exercise 8.1

Q.1

(i) **Determine the quadrant of coordinate plane in which the following points lies**

P (–4, 3)

It lies in second quadrant
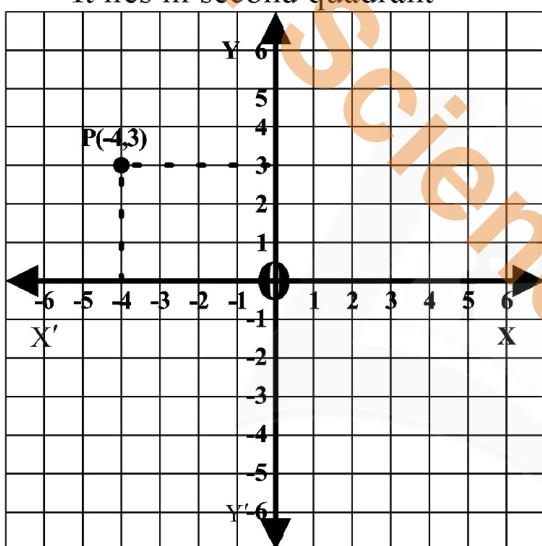
Q (–5, –2)

It lies in third quadrant
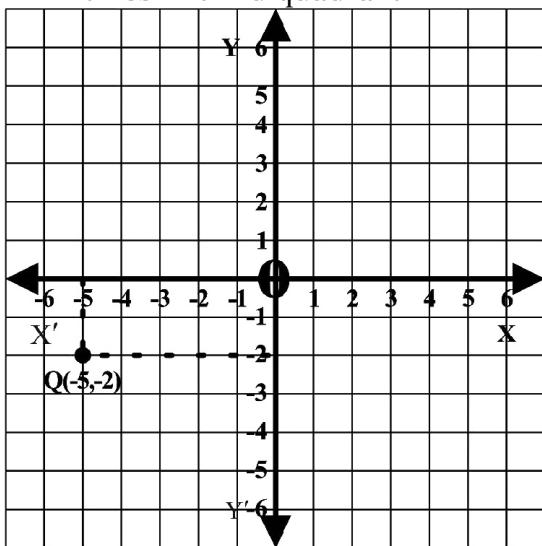
R (2, 2)

It lies in first quadrant
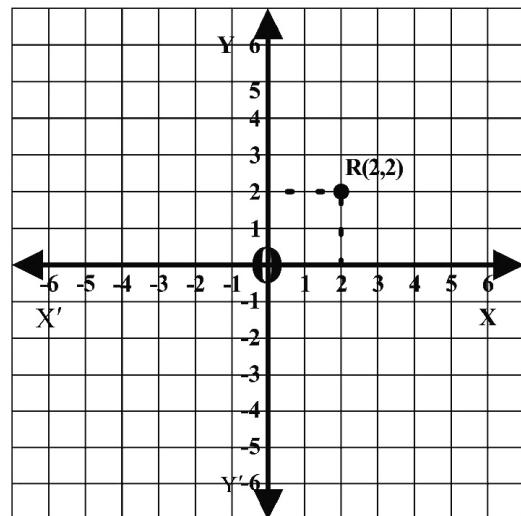
S (2, –6)

It lies in fourth quadrant
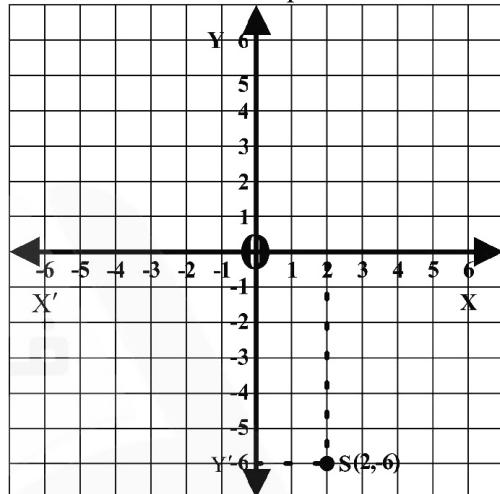
Q.2 Draw the graph of each of the following i.e.

(i) $x = 2$

The table for the points of equation $x = 2$ is as under

x	2	2	2	2	2	2
y	-3	-2	-1	0	1	2
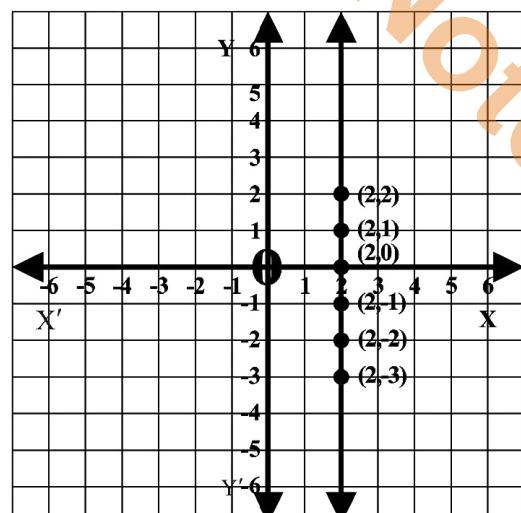
(ii) $x = -3$

The table for the points of equation

$x = -3$ is as under

x	-3	-3	-3	-3	-3	-3	-3
y	-3	-2	-1	0	1	2	3
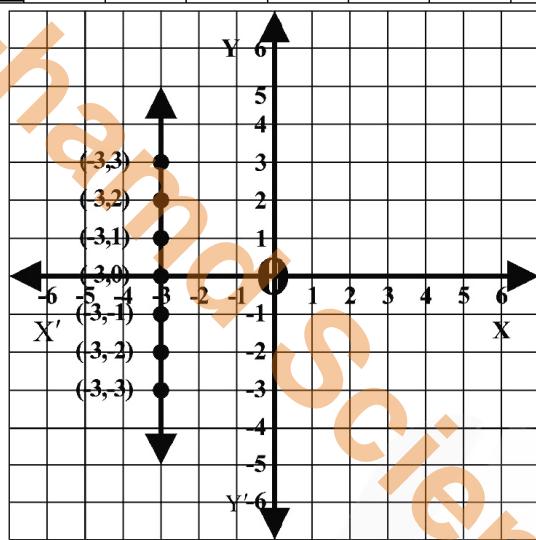
(iii) $y = -1$

x	-1	-1	-1	-1	-1	-1	-1
y	-3	-2	-1	0	1	2	3
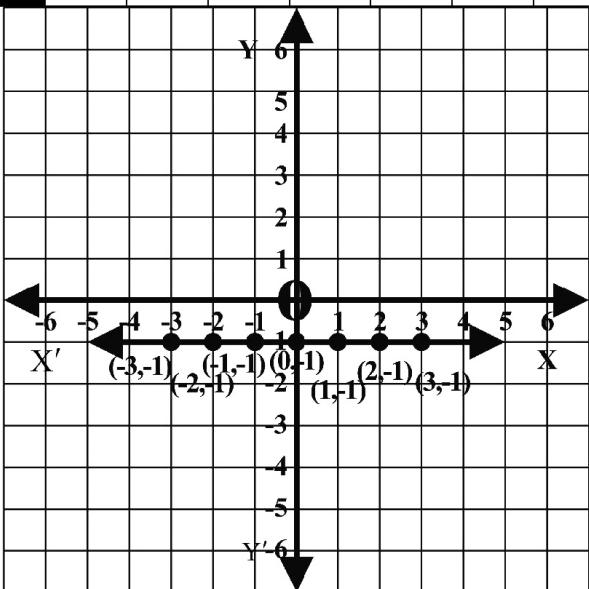
(iv) $y = 3$

x	3	3	3	3	3	3	3	3
y	-3	-2	-1	0	1	2	3	4
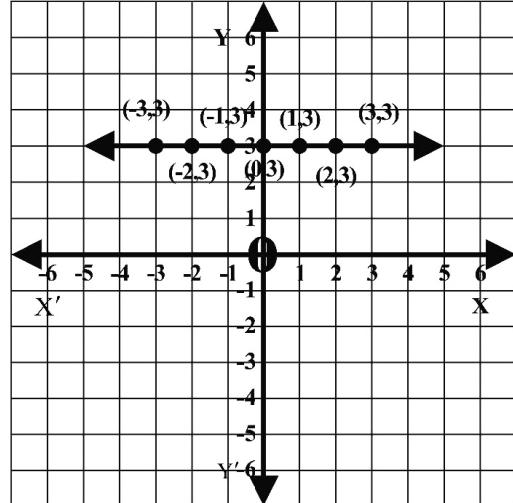
(v) $y = 0$

x	-3	-2	-1	0	1	2	3	4
y	0	0	0	0	0	0	0	0
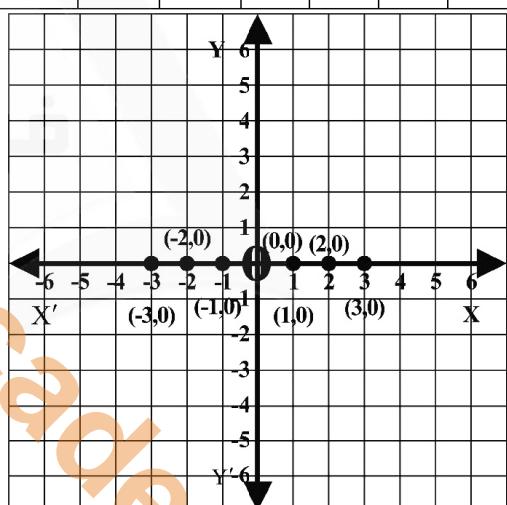
(vi) $x = 0$

x	0	0	0	0	0	0	0
y	-3	-2	-1	0	1	2	3
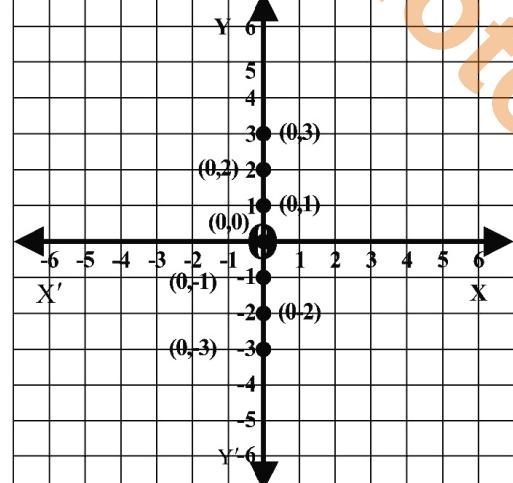
(vii) $y = 3x$

x	y = 3x
....	....
–2	$3(–2) = –6$
–1	$3(–1) = –3$
0	$3(0) = 0$
1	$3(1) = 3$
2	$3(2) = 6$
...	...

(ix) $\dfrac{1}{2} = x$

Or $x = \dfrac{1}{2}$

x	y
$\dfrac{1}{2} = 0.5$	–3
$\dfrac{1}{2} = 0.5$	–2
$\dfrac{1}{2} = 0.5$	–1
$\dfrac{1}{2} = 0.5$	0
$\dfrac{1}{2} = 0.5$	1
$\dfrac{1}{2} = 0.5$	2
$\dfrac{1}{2} = 0.5$	.....
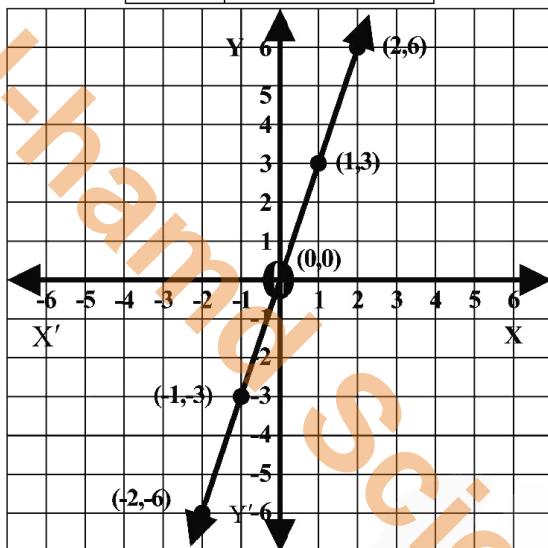
(viii) $-y = 2x$

Multiply both sides by (–)

$-(-y) = -2x$

$y = -2x$

| x	y = –2x
....	....
–2	$–2(–2) = 4$
–1	$–2(–1) = 2$
0	$–2(0) = 0$
1	$–2(1) = –2$
2	$–2(2) = –4$
...	...
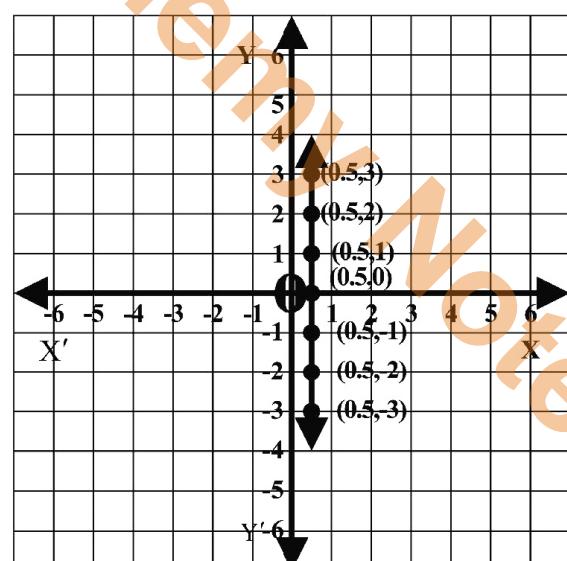
(x) $3y = 5x$

$$y = \frac{5}{3}x$$

x	$y = \dfrac{5}{3}x$
-6	$\dfrac{5}{\cancel{3}} \times -\cancel{6}^{2} = -10$
−3	$\dfrac{5}{\cancel{3}} \times \cancel{-3} = -5$
0	$\dfrac{5}{3} \times 0 = 0$
3	$\dfrac{5}{\cancel{3}} \times \cancel{3} = 5$
6	$\dfrac{5}{\cancel{3}} \times \cancel{6}^{2} = 10$

(xii) $2x - y = 2$

$$2x - 2 = y \ \text{or} \ y = 2x - 2$$

x	y = 2x -2
−1	2(−1)−2= −4
0	2(0)−2= −2
1	2(1)−2= 0
2	2(2)−2= 2

(xi) $2x - y = 0$

$$2x = y \ \text{or} \ y = 2x$$

x	y = 2x
−2	2(−2)= −4
−1	2(−1)= −2
0	2(0)= 0
1	2(1)= 2
2	2(2)= 4
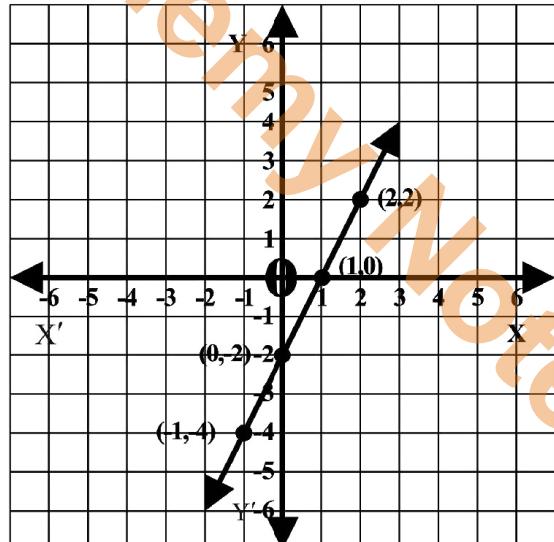
(xiii) $x - 3y + 1 = 0 \implies x + 1 = +3y$

$$y = \frac{x+1}{3}$$

x	$y = \dfrac{x+1}{3}$
−4	$y = \dfrac{-4+1}{3} = -1$
2	$y = \dfrac{2+1}{3} = 1$
5	$y = \dfrac{5+1}{3} = 2$
8	$y = \dfrac{8+1}{3} = 3$
11	$y = \dfrac{11+1}{3} = 4$
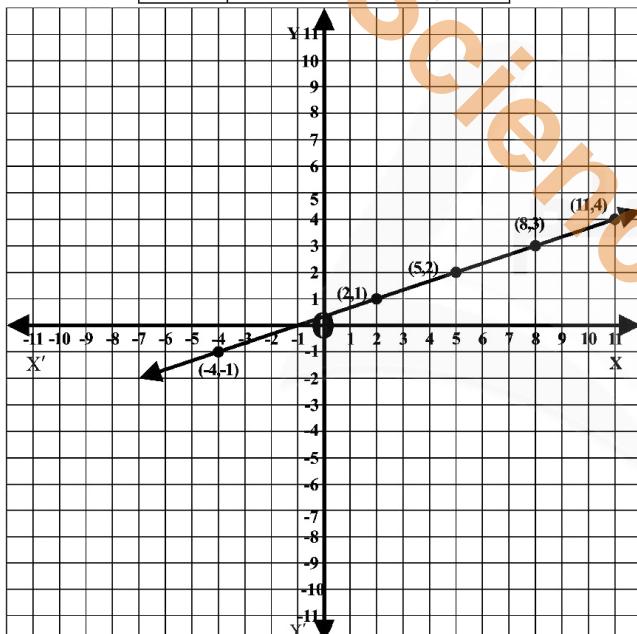
(xiv) $3x - 2y + 1 = 0$

$$y = \frac{3x+1}{2}$$

x	$y = \dfrac{3x+1}{2}$
−1	$y = \dfrac{3(-1)+1}{2} = \dfrac{-2}{2} = -1$
1	$y = \dfrac{3(1)+1}{2} = \dfrac{4}{2} = 2$
3	$y = \dfrac{3(3)+1}{2} = \dfrac{10}{2} = 5$

5	$y = \dfrac{3(5)+1}{2} = \dfrac{16}{2} = 8$
7	$y = \dfrac{3(7)+1}{2} = \dfrac{22}{2} = 11$
9	$y = \dfrac{3(9)+1}{2} = \dfrac{28}{2} = 14$
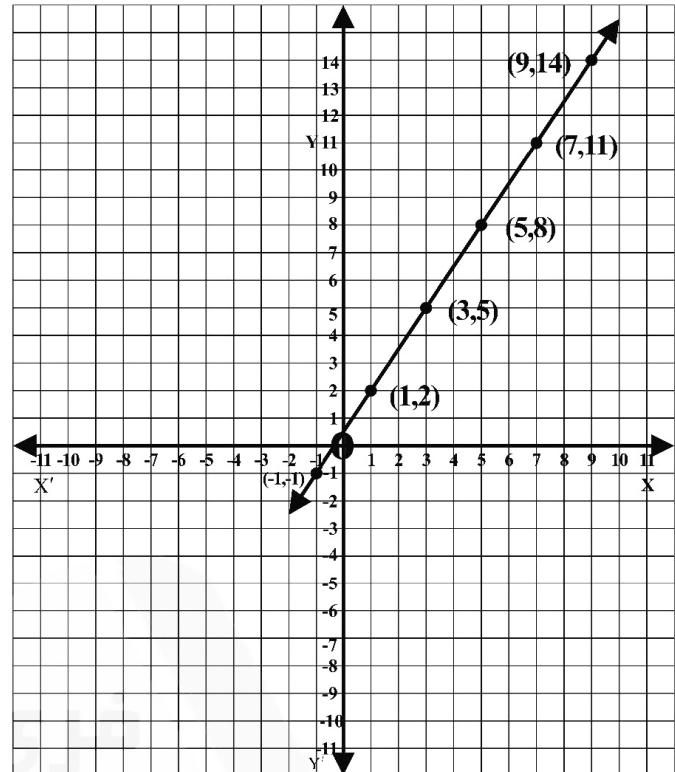
Q.3 **Are the following lines (i) parallel to $x-axis$ (ii) parallel to $y-axis$**

Solution:

(i) $\quad 2x - 1 = 3$

$2x = 3 + 1$

$2x = 4$

$x = \dfrac{4}{2}$

$x = 2$ it is a line parallel to y-axis

(ii) $\quad x + 2 = -1$

$x = -1 - 2$

$x = -3$ it is a line parallel to $y-axis$

(iii) $\quad 2y + 3 = 2$

$2y = 2 - 3$

$2y = -1$

$y = \dfrac{-1}{2}$ it is a line parallel to $x - axis$

(iv) $x + y = 0$

$x = -y$ It is neither parallel to $x - axis$ nor $y - axis$

(v) $2x - 2y = 0$

$2x = 2y$

$x = \dfrac{2y}{2}$

$x = y$

$y = x$

It is neither parallel to $x - axis$ nor $y - axis$

Q.4 Find the value of m and c of the following lines by expressing them in the form $y = mx + c$

Solution:

(a) $2x + 3y - 1 = 0$

$3y = -2x + 1$

$y = \dfrac{-2x + 1}{3}$

$y = \dfrac{-2x}{3} + \dfrac{1}{3}$

$m = -\dfrac{2}{3}$ and $c = \dfrac{1}{3}$

(b) $x - 2y = -2$

$x + 2 = 2y$

$\dfrac{x + 2}{2} = y$

Or

$y = \dfrac{x + 2}{2}$

$y = \dfrac{1}{2}x + \dfrac{2}{2}$

$y = \dfrac{1}{2}x + 1$

So, $m = \dfrac{1}{2}$ $c = 1$

(c) $3x + y - 1 = 0$

$y = 1 - 3x$

or

$y = -3x + 1$

$m = -3$ $c = 1$

(d) $2x - y = 7$

$2x - 7 = y$

Or

$y = 2x - 7$

$m = 2$ $c = -7$

(e) $3 - 2x + y = 0$

$y = 2x - 3$

$m = 2$ $c = -3$

(f) $2x = y + 3$

$2x - 3 = y$

Or

$y = 2x - 3$

$m = 2$ $c = -3$

Q.5 Verify whether the following point lies on the line 2x–y + 1 =0 or not

Solution:

(i) $(2, 3)$

$2x - y + 1 = 0$

$2(2) - 3 + 1 = 0$

$4 - 3 + 1 = 0$

$2 \neq 0$

$\therefore$ The point does not lie on the line

(ii) $(0, 0)$

$2x - y + 1 = 0$

$2(0) - 0 + 1 = 0$

$0 - 0 + 1 = 0$

$1 \neq 0$

$\therefore$ The point does not lie on the line

(iii) $(-1, 1)$

$2x - y + 1 = 0$

$2(-1) - 1 + 1 = 0$

$-2 - 1 + 1 = 0$

$-2 \neq 0$

$\therefore$ The point does not lie on the line

(iv) $(2, 5)$

$2x - y + 1 = 0$

$2(2) - 5 + 1 = 0$

$4 - 5 + 1 = 0$

$0 = 0$

$\therefore$ It lies on the line

(v) $(5, 3)$

$2x - y + 1 = 0$

$2(5) - 3 + 1 = 0$

$10 - 3 + 1 = 0$

$8 \neq 0$

$\therefore$ It does not lie on the line