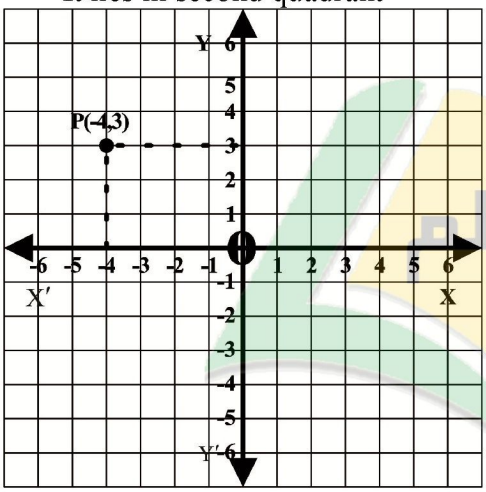
Exercise 8.1

Q.1

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

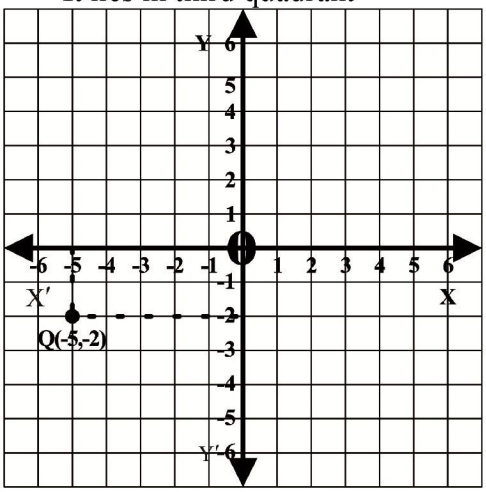
P (–4, 3)

It lies in second quadrant



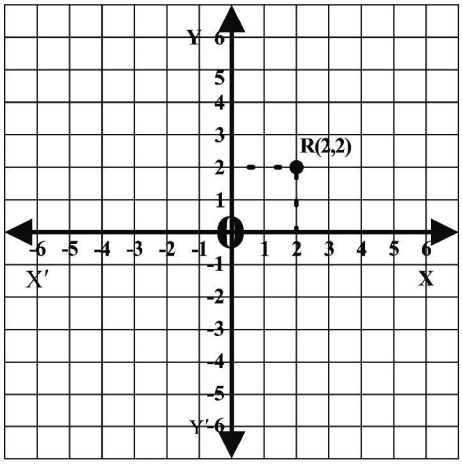
Q (–5, –2)

It lies in third quadrant



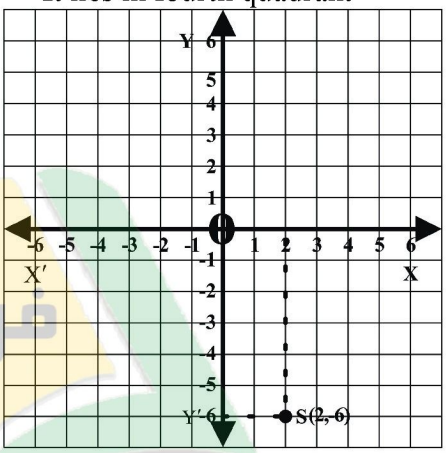
R (2, 2)

It lies in first quadrant



S (2, –6)

It lies in fourth quadrant

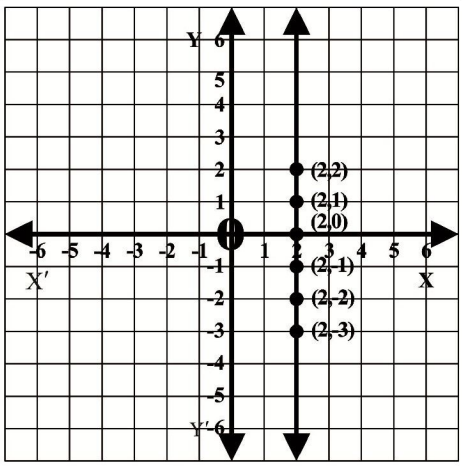


Q.2 Draw the graph of each of the following i.e.

(i) $x = 2$

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

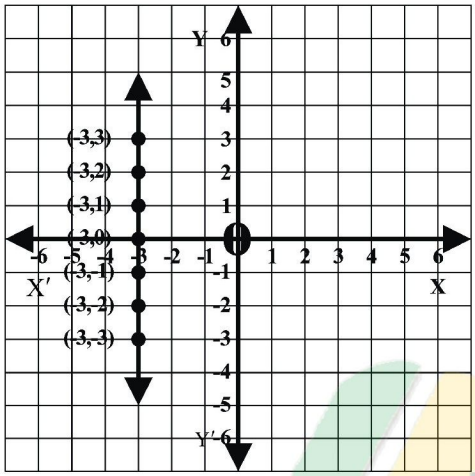
x	2	2	2	2	2	2
y	-3	-2	-1	0	1	2



(ii) $x = -3$

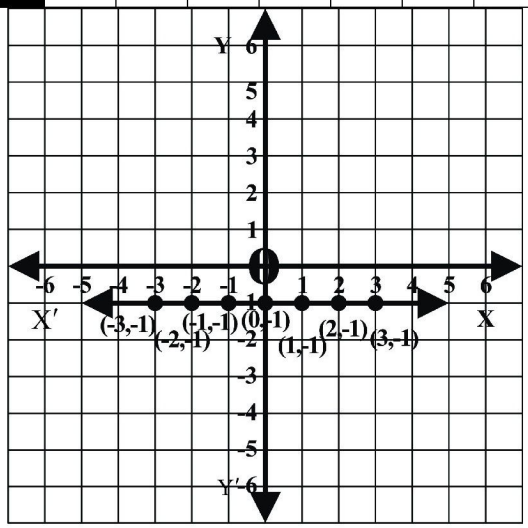
The table for the points of equation $x = -3$ is as under

x	-3	-3	-3	-3	-3	-3	-3
y	-3	-2	-1	0	1	2	3



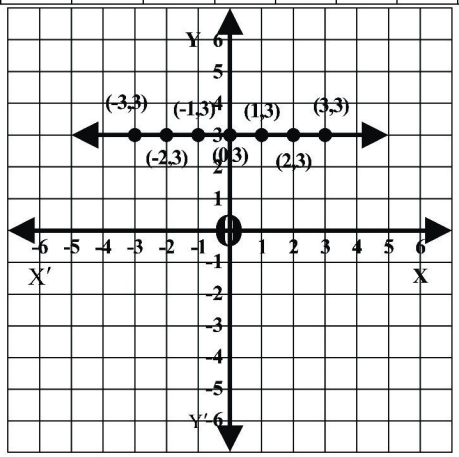
(iii) $y = -1$

x	-1	-1	-1	-1	-1	-1	-1
y	-3	-2	-1	0	1	2	3



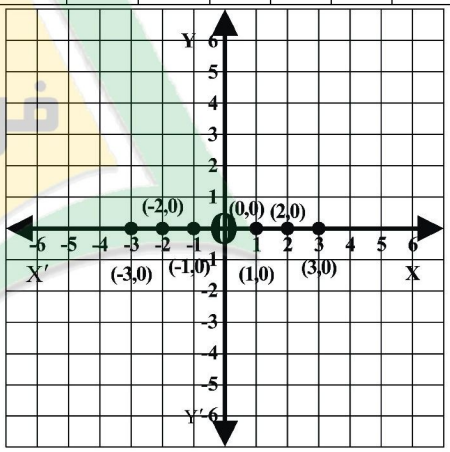
(iv) $y = 3$

x	3	3	3	3	3	3	3	3
y	-3	-2	-1	0	1	2	3	4



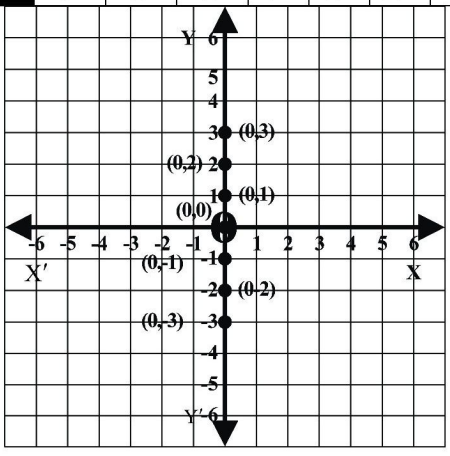
(v) $y = 0$

x	-3	-2	-1	0	1	2	3	4
y	0	0	0	0	0	0	0	0



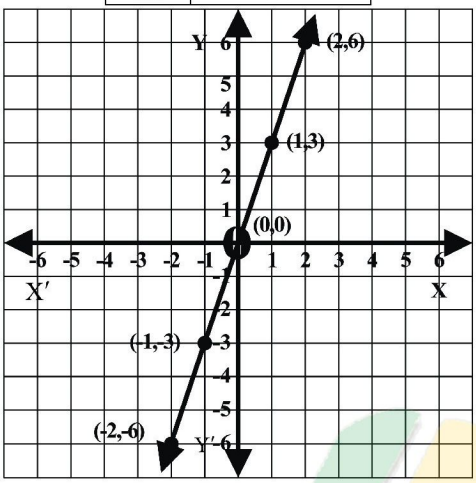
(vi) $x = 0$

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	$3(2) = 6$
...	...



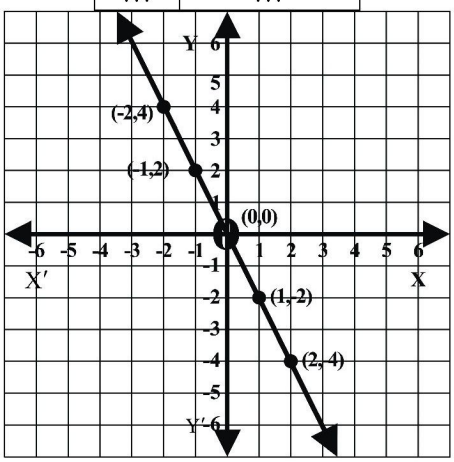
(viii) $-y = 2x$

Multiply both sides by (–)

$-(-y) = -2x$

$y = -2x$

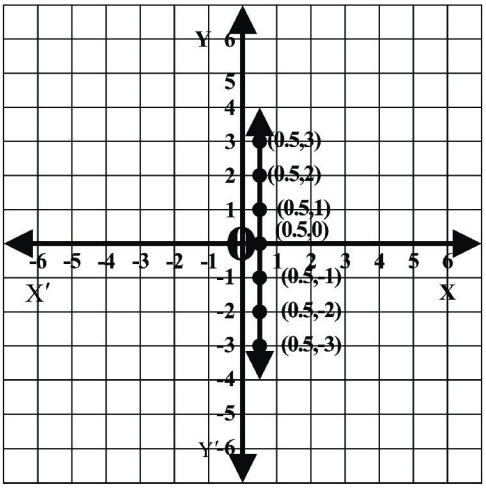
x	$y = -2x$
....	....
–2	$-2(-2) = 4$
–1	$-2(-1) = 2$
0	$-2(0) = 0$
1	$-2(1) = -2$
2	$-2(2) = -4$
...	...



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

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

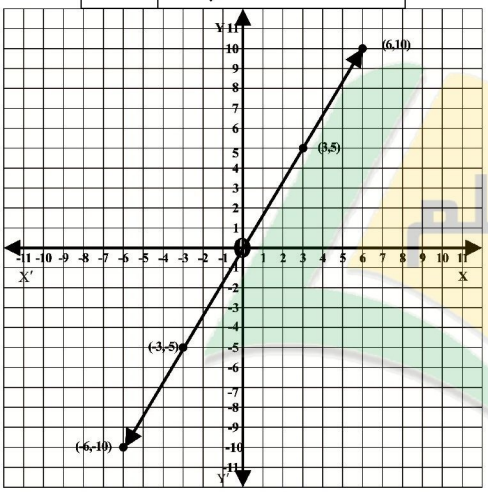
x	y
$\frac{1}{2} = 0.5$	–3
$\frac{1}{2} = 0.5$	–2
$\frac{1}{2} = 0.5$	–1
$\frac{1}{2} = 0.5$	0
$\frac{1}{2} = 0.5$	1
$\frac{1}{2} = 0.5$	2
$\frac{1}{2} = 0.5$	.....



(x) $3y = 5x$

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

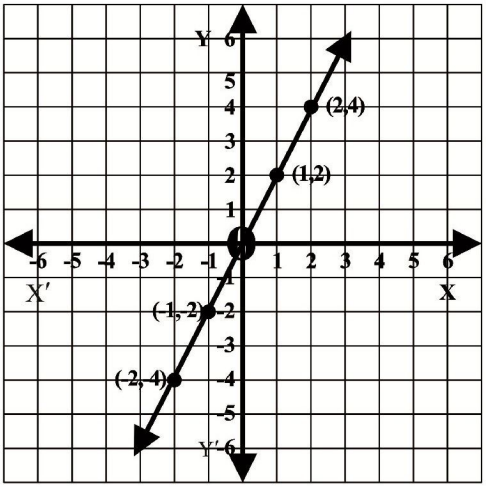
x	$y = \frac{5}{3}x$
-6	$\frac{5}{\cancel{3}} \times -\cancel{6}^{2} = -10$
−3	$\frac{5}{\cancel{3}} \times \cancel{-3} = -5$
0	$\frac{5}{3} \times 0 = 0$
3	$\frac{5}{\cancel{3}} \times \cancel{3} = 5$
6	$\frac{5}{\cancel{3}} \times \cancel{6}^{2} = 10$



(xi) $2x - y = 0$

$2x = y$ or $y = 2x$

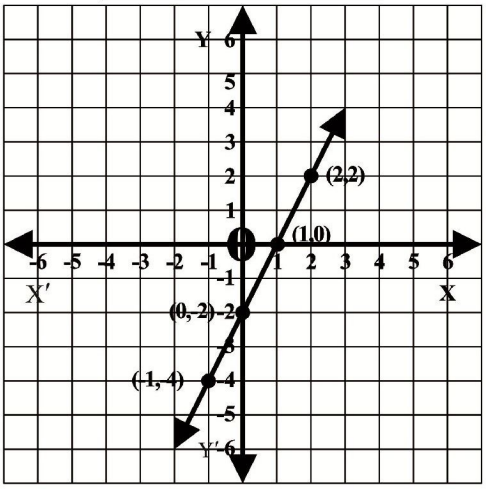
x	y = 2x
−2	2(−2)= −4
−1	2(−1)= −2
0	2(0)= 0
1	2(1)= 2
2	2(2)= 4



(xii) $2x - y = 2$

$2x - 2 = y$ or $y = 2x - 2$

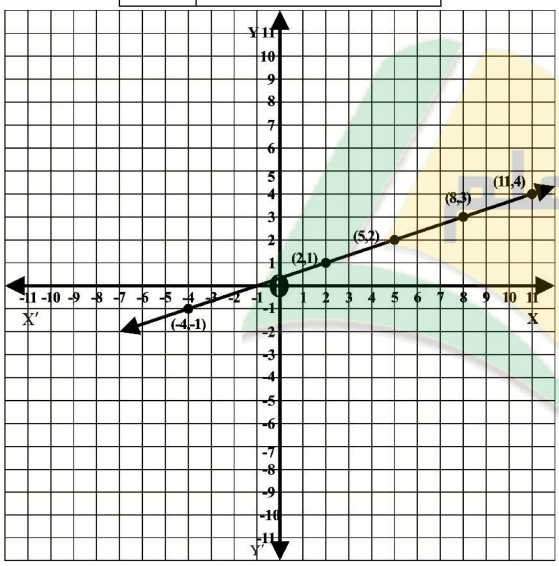
x	y = 2x -2
−1	2(−1)−2= −4
0	2(0)−2= −2
1	2(1)−2= 0
2	2(2)−2= 2



(xiii) $x-3y+1=0 \Rightarrow x+1=+3y$

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

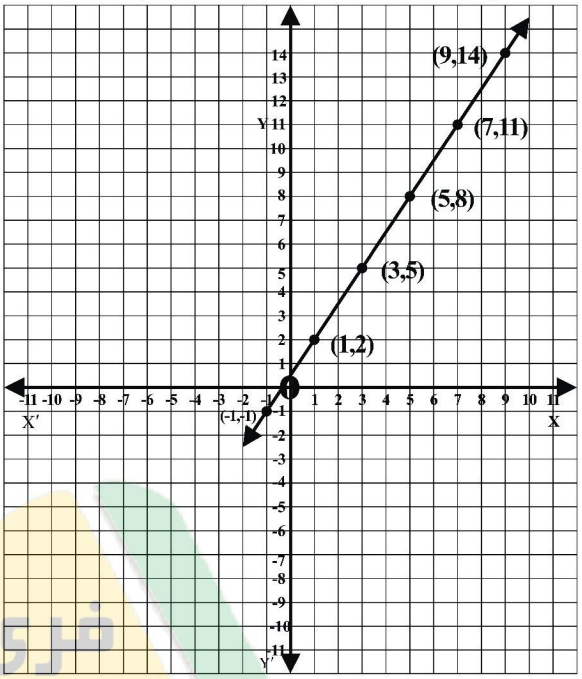
x	$y=\frac{x+1}{3}$
-4	$y=\frac{-4+1}{3}=-1$
2	$y=\frac{2+1}{3}=1$
5	$y=\frac{5+1}{3}=2$
8	$y=\frac{8+1}{3}=3$
11	$y=\frac{11+1}{3}=4$



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

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

x	$y=\frac{3x+1}{2}$
-1	$y=\frac{3(-1)+1}{2}=\frac{-2}{2}=-1$
1	$y=\frac{3(1)+1}{2}=\frac{4}{2}=2$
3	$y=\frac{3(3)+1}{2}=\frac{10}{2}=5$
5	$y=\frac{3(5)+1}{2}=\frac{16}{2}=8$
7	$y=\frac{3(7)+1}{2}=\frac{22}{2}=11$
9	$y=\frac{3(9)+1}{2}=\frac{28}{2}=14$



Q.3 Are the following lines (i) parallel to $x-axis$ (ii) parallel to $y-axis$

Solution:

(i) $2x-1=3$

$2x=3+1$

$2x=4$

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

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

(ii) $x+2=-1$

$x=-1-2$

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

(iii) $2y+3=2$

$2y=2-3$

$2y=-1$

$y = \frac{-1}{2}$ 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) $2x - 2y = 0$

$2x = 2y$

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

$x = y$

$y = x$

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

$3y = -2x + 1$

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

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

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

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

$x + 2 = 2y$

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

Or

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

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

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

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

(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

Last Updated: September 2020

Report any mistake at freeilm786@gmail.com