Exercise 8.1

1. Determine the quadrant of the coordinate plane in which the following points lie.

Ans. (i)P (–4, 3) II quadrant

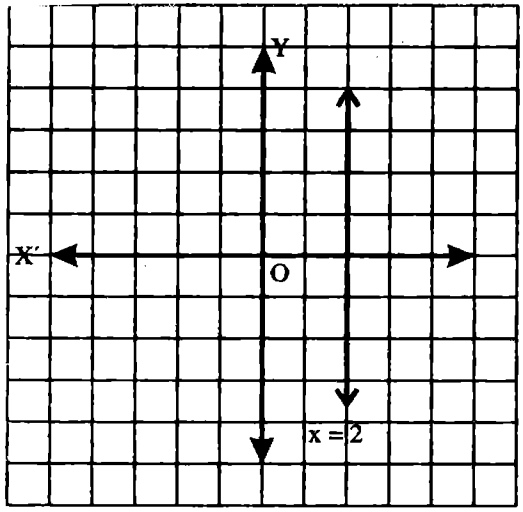
(ii) Q (–5, –2) III quadrant

(iii) P (2, 2) I quadrant

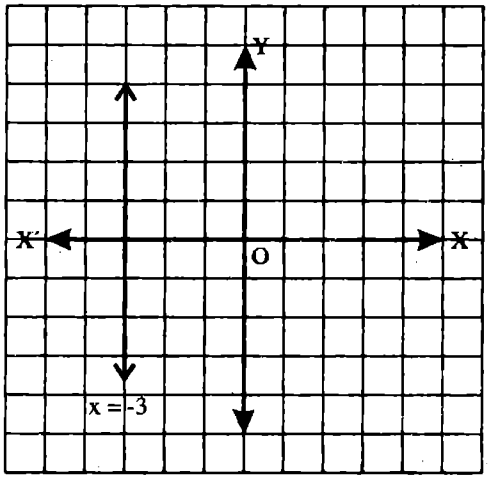
(iv) S(2, –6) IV quadrant

2. Draw the graph of each of the following.

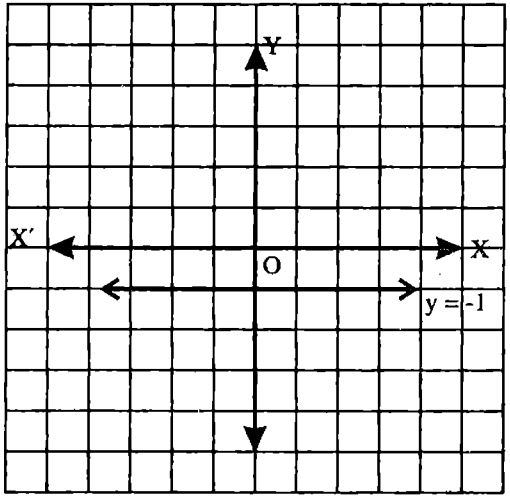
(i) $x = 2$



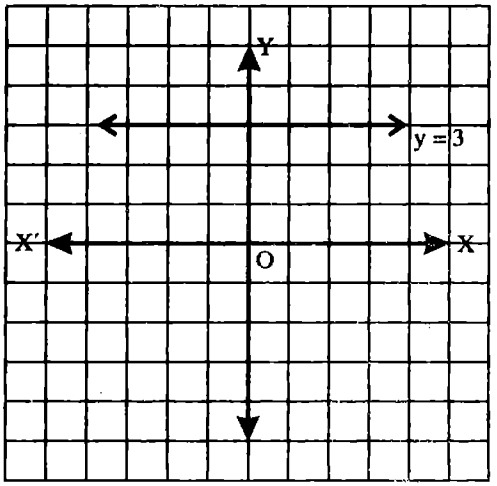
(ii) $x = -3$



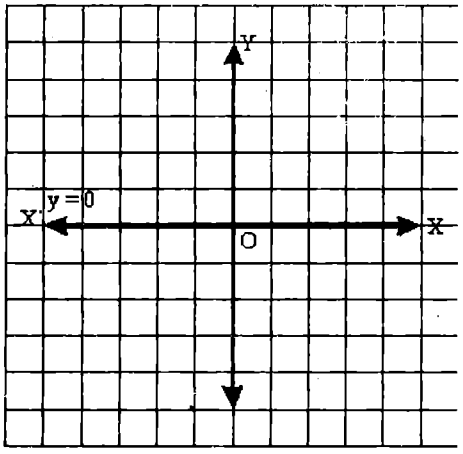
iii) $y = -1$



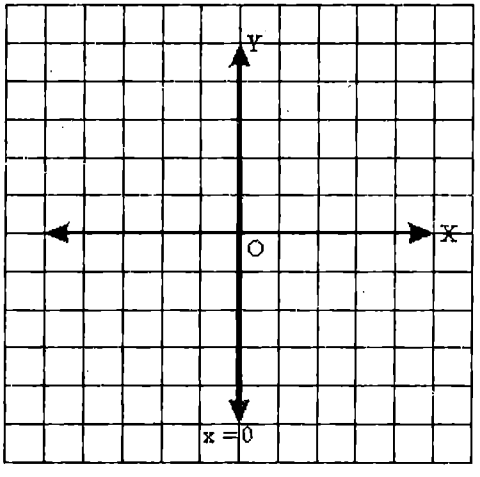
(iv) $y = 3$



(v) $y = 0$



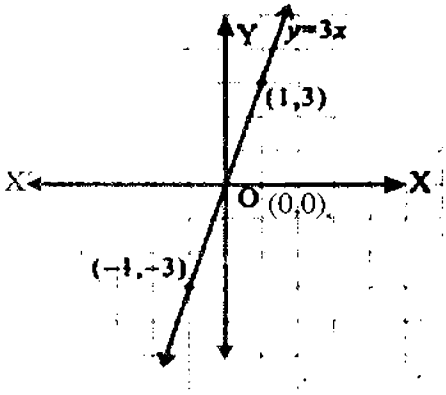
(vi) $x = 0$



(vii) $y = 3x$

Table for y = 3x

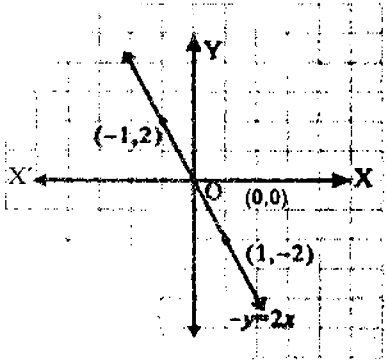
x	-1	0	1
y	-3	0	3



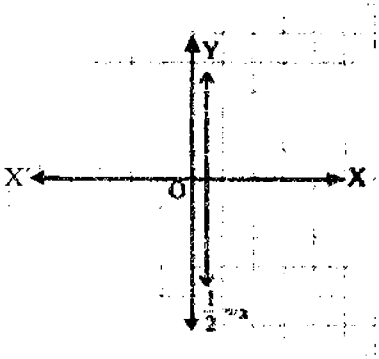
(viii) $-y = 2x$

Table for -y = 2x

x	-1	0	1
y	2	0	-2



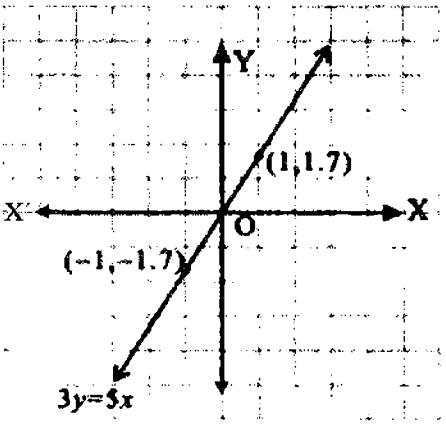
(ix) $x = \frac{1}{2}$



(x) $3y = 5x$

Table for 3y = 5x

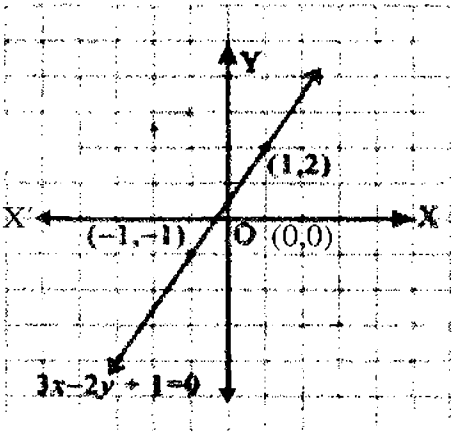
x	-1	0	1
y	-1.7	0	1.7



(xi) $2x-y = 0$

Table for 2x - y = 0

x	-1	0	1
y	-2	0	2



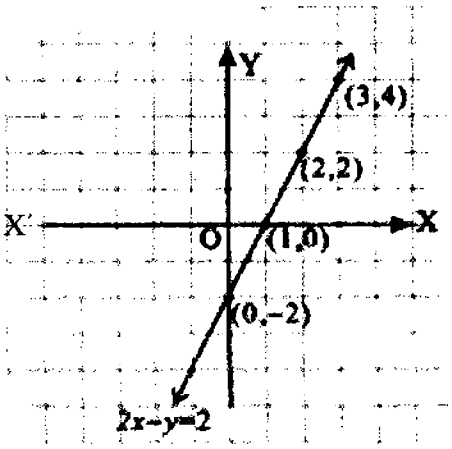
(xii) $2x - y = 2$

Table for 2x – y = 2

-y = 2 -2x

y = 2x -2

x	0	1	2	3
y	-2	0	2	4



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

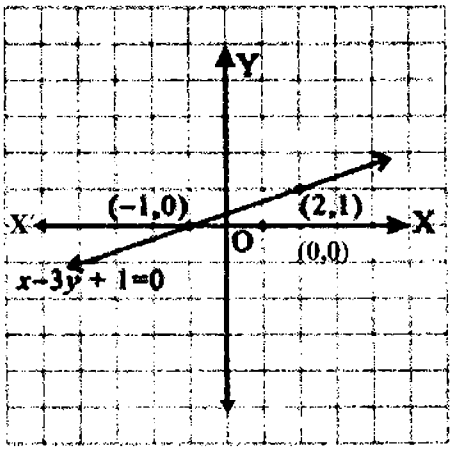
Table for $x - 3y + 1 = 0$

$-3y = -x - 1$

$3y = x + 1$

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

x	-1	2
y	0	1



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

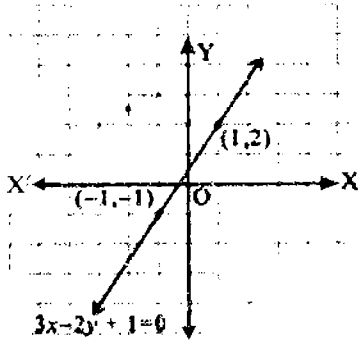
$-2y = -3x - 1$

$2y = 3x + 1$

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

Table for $3x - 2y + 1 = 0$

x	-1	1
y	-1	2



Q.3 Are the following lines:

(i) Parallel to x–axis

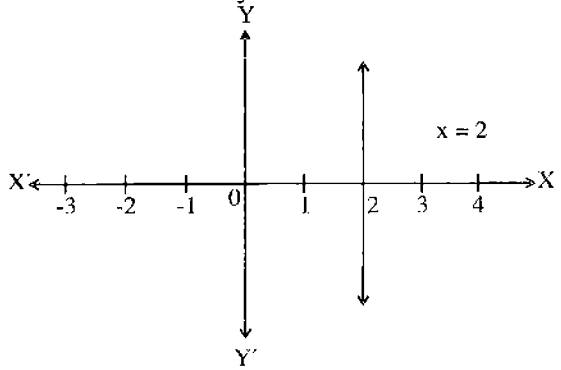
(ii) Parallel to y–axis

(i) $2x - 1 = 3$

$2x = 3 + 1$

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

Parallel to y–axis

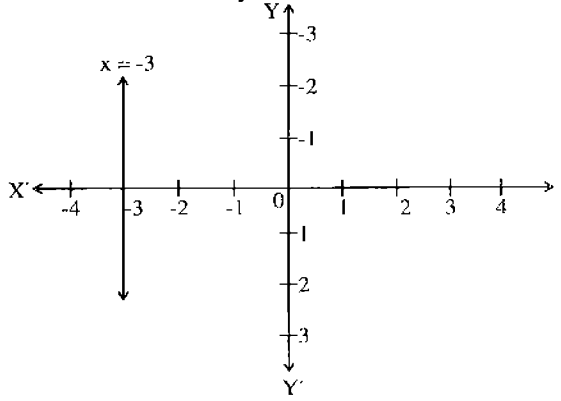


(ii) $x + 2 = -1$

$\Rightarrow \quad x = -1 - 2$

$x = -3$

Parallel to y–axis

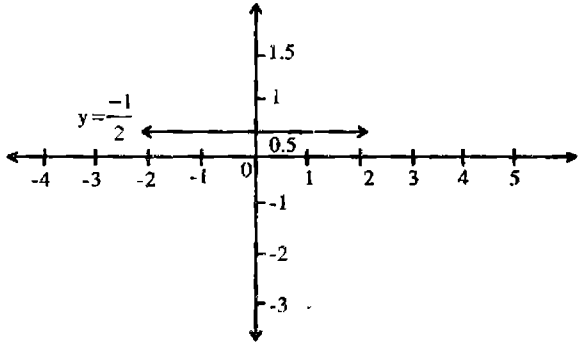


(iii) $2y + 3 = 2$

$\Rightarrow \quad 2y = 2 - 3$

$y = -\frac{1}{2}$

Parallel to x–axis



(iv) $x + y = 0$

$\Rightarrow \quad x = -y$

neither

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

$2x = 2y$

$x = y$

neither

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

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

$-2y = -2 - x$

$2y = 2 + x$

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

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

$y = \frac{1}{2}x + 1 \ldots\ldots(1)$

$y = mx + c \ldots..(2)$

comparing (1) and (2) we get

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

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

$3y = -2x + 1$

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

$y = \frac{-2}{3}x + \frac{1}{3} \ldots.(1)$

$y = mx + c \ldots\ldots.(2)$

comparing (1) and (2) we get

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

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

$y = -3x + 1.....(1)$

Also $y = mx + c.....(2)$

Comparing (1) and (2)

$m = -3$ and $c = 1$

(d) $2x - y = 7$

$-y = 7 - 2x$

$y = -7 + 2x$

$y = 2x - 7.....(1)$

also $y = mx + c \ldots\ldots(2)$

comparing (1) and (2)

$m = 2$ and $c = -7$

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

$y = -3 + 2x$

$y = 2x - 3 \ldots.(1)$

Also $y = mx + c.....(2)$

Comparing (1) and (2) we get

$m = 2$ and $c = -3$

(f) $2x = y + 3$

$y = 2x - 3 \ldots\ldots(1)$

Also $y = mx + c.....(2)$

Comparing (1) and (2) we get

$m = 2$ and $c = -3$

Q.5 Verify whether the following points lies on the line $2x - y + 1 = 0$ or not.

Ans. $2x - y + 1 = 0$

(i) $(2, 3) \Rightarrow x = 2, y = 3$

$2x - y + 1 = 0$

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

$4 - 3 + 1 \neq 0$

$2 \neq 0$ Point (2,3) does not lie on the line

(ii) $(0, 0) \Rightarrow x = 0, y = 0$

$2x - y + 1 = 0$

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

$1 \neq 0$

Point (0,0) does not lie on the line

(iii) $(-1, 1) \Rightarrow x = -1, y = 1$

$2x - y + 1 = 0$

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

$-2 - 1 + 1 = 0$

$-2 \neq 0$

Point (-1,1) does not lie on the line

(iv) $(2, 5) \Rightarrow x = 2, y = 5$

$2x - y + 1 = 0$

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

$4 - 5 + 1 = 0$

$-1 + 1 = 0$

$0 = 0$

Yes the Point (2,5) lies on the line

(v) $(5, 3) \Rightarrow x = 5, y = 3$

$2x - y + 1 = 0$

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

$10 - 2 = 0$

$8 \neq 0$

The point (5, 3) does not lie on the line