Pair of Linear Equations in Two varibles Ex 3.2 Q30

Answer :

The given equations are

$2x-3y+6=0 \quad .....(i)$

$2x+3y-18=0 \quad .....(ii)$

$y-2=0 \quad .....(iii)$

The two points satisfying (i) can be listed in a table as,

x	-3	6
y	0	6

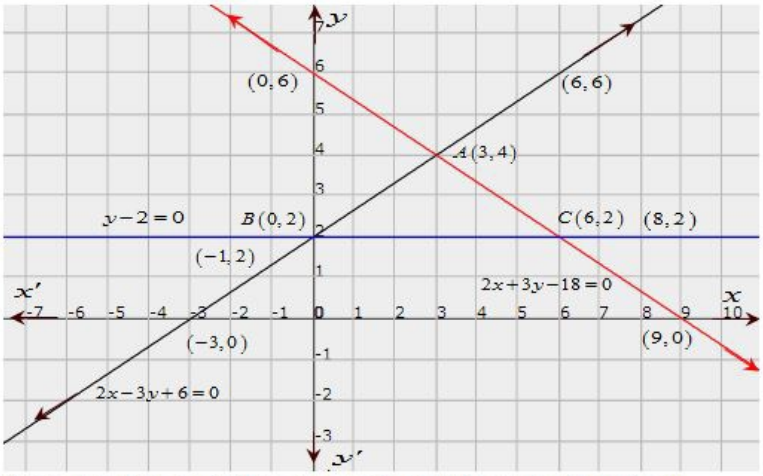
The two points satisfying (ii) can be listed in a table as,

x	0	9
y	6	0

The two points satisfying (iii) can be listed in a table as,

x	-1	8
y	2	2

Now, graph of equations (i), (ii) and (iii) can be drawn as,



It is seen that the coordinates of the vertices of the obtained triangle are

$A(3,4),\ B(0,2),\ C(6,2)$

$\therefore \text{Area of } \Delta ABC = \frac{1}{2}\times \text{Base}\times\text{height} = \frac{1}{2}\times 6\times 2 \text{ sq units} = 6 \text{ sq units}$

Pair of Linear Equations in Two varibles Ex 3.2 Q31

Answer :

The given equations are:

$2x-3y+6=0 \quad .....(i)$

$2x+3y-18=0 \quad .....(ii)$

Putting $x=0$ in equation (i) we get:

$\Rightarrow 2\times 0-3y=-6$

$\Rightarrow y=2$

$x=0, y=2$

Putting $y=0$ in equation (i) we get:

$\Rightarrow 2x-3\times 0=-6$

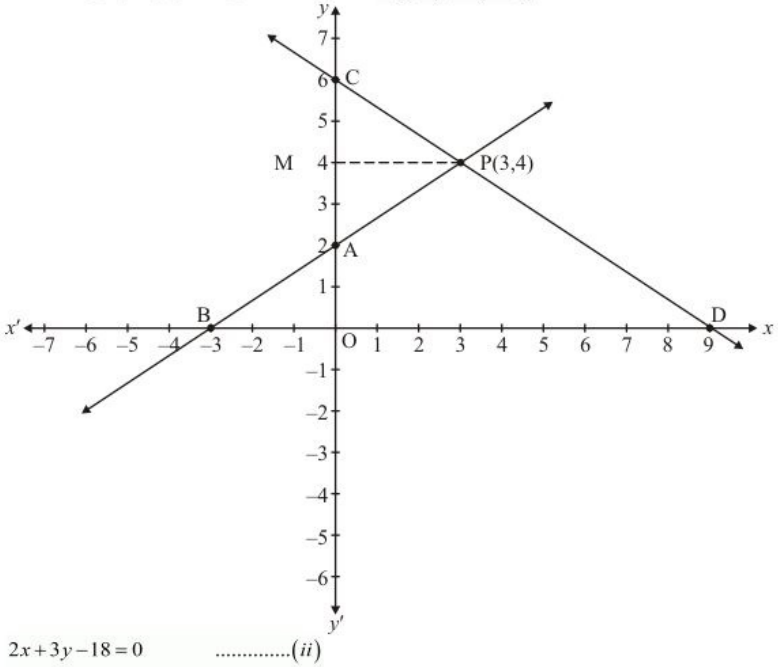
$\Rightarrow x=-3$

$x=-3, \quad y=0$

Use the following table to draw the graph

x	0	-3
y	2	0

Draw the graph by plotting the two points $A(0,2)$, $B(-3,0)$ from table.



$2x+3y-18=0 \quad .....(ii)$

Putting $x=0$ in equation (ii) we get:

$\Rightarrow 2\times 0+3y=18$

$\Rightarrow y=6$

$x=0, \quad y=6$

Putting $y=0$ in equation (ii), we get:

$\Rightarrow 2x+3\times 0=18$

$\Rightarrow x=9$

$x=9, \quad y=0$

Use the following table to draw the graph.

x	0	9
y	6	0

Draw the graph by plotting the two points $C(0,6)$, $D(9,0)$ from table.

The two lines intersect at $P(3,4)$.

Hence $x=3$, $y=4$ is the solution of the given equations.

The area enclosed by the lines represented by the given equations and the y−axis

Now,

$\Rightarrow$ Required area = Area of PCA

$\Rightarrow$ Required area = $1/2(base\times height)$

$\Rightarrow$ Required area = $1/2(CA\times PM)$

$\Rightarrow$ Required area = $1/2(4\times 3)$sq.units

Hence the required area is $\boxed{6 \text{ sq. units}}$

********** END **********