Pair of Linear Equations in Two varibles Ex 3.2 Q27

Answer :

The given equations are

$4x-3y+4=0 \quad .....(i)$

$4x+3y-20=0 \quad .....(ii)$

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

$\Rightarrow 4\times 0-3y=-4$

$\Rightarrow y=4/3$

$x=0, \quad y=4/3$

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

$\Rightarrow 4x-3\times 0=-4$

$\Rightarrow x=-1$

$x=-1, \quad y=0$

Use the following table to draw the graph.

x	0	-1
y	$4/3$	0

The graph of (i) can be obtained by plotting the points (0, 4/3), (−1, 0).

$4x+3y=20 \quad .....(ii)$

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

$\Rightarrow 4\times 0+3y=20$

$\Rightarrow y=20/3$

$x=0, \quad y=20/3$

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

$\Rightarrow 4x+3\times 0=20$

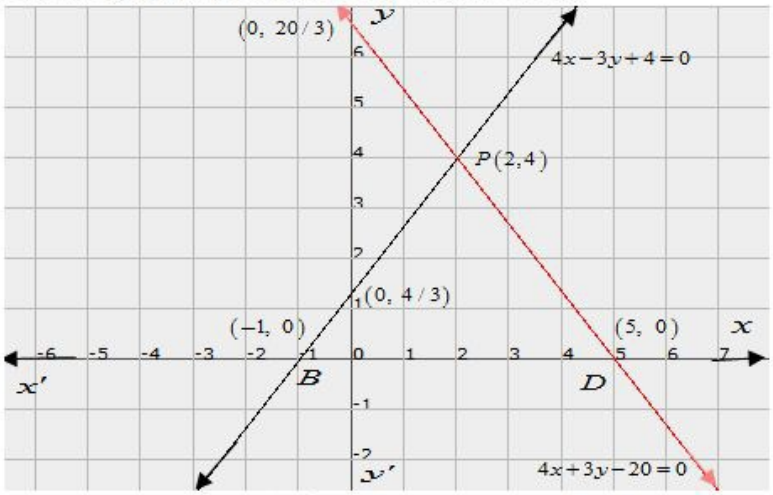
$\Rightarrow x=5$

$x=5, \quad y=0$

Use the following table to draw the graph.

x	0	5
y	$20/3$	0

Draw the graph by plotting the two points from table.



The two lines intersect at $P(2,4)$.

Hence $x=2, \quad y=4$ is the solution of the given equations.

Now,

$\Rightarrow$ Required area = Area of PBD

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

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

$\Rightarrow$ Required area = $1/2(6 \times 4)$

Hence, the area = 12 sq.units

Pair of Linear Equations in Two varibles Ex 3.2 Q28

Answer :

The given equations are

$3x+y-11=0 \quad .....(i)$

$x-y-1=0 \quad .....(ii)$

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

$\Rightarrow 3\times 0+y=11$

$\Rightarrow y=11$

$x=0, \quad y=11$

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

$\Rightarrow 3x+0=11$

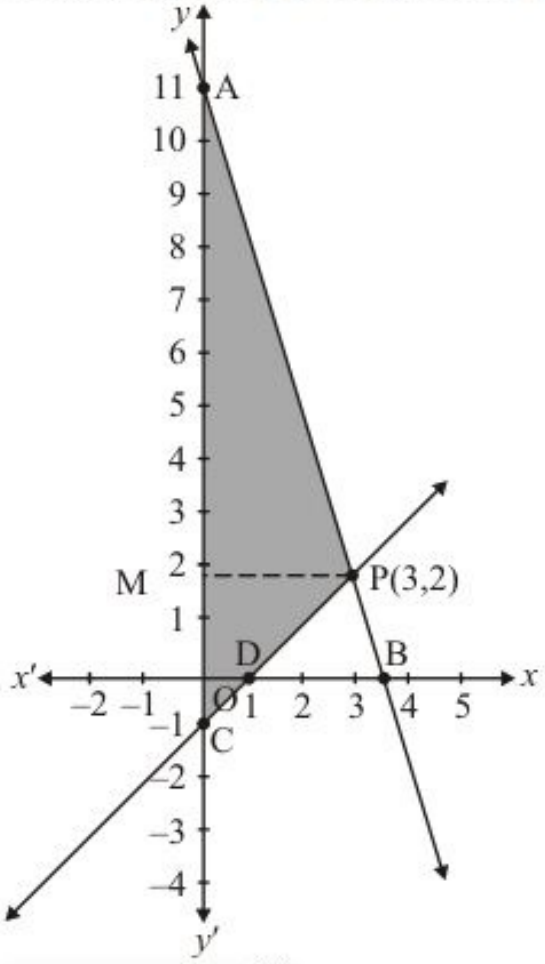
$\Rightarrow x=11/3$

$x=11/3, \quad y=0$

Use the following table to draw the graph.

x	0	$11/3$
y	11	0

Draw the graph by plotting the two points from table.



$x-y=1 \quad .....(ii)$

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

$\Rightarrow 0-y=1$

$\Rightarrow y=-1$

$x=0, \quad y=-1$

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

$\Rightarrow x-0=1$

$\Rightarrow x=1$

$x=1, \quad y=0$

Use the following table to draw the graph.

x	0	1
y	-1	0

Draw the graph by plotting the two points from table.

The two lines intersect at $P(3,2)$.

Hence $x=3, \quad y=2$ is the solution of the given equations

The area enclosed by the lines represented by the given equations and the y−axis is shaded region in the figure

Now, Required area = Area of shaded region

$\Rightarrow$ Required area = Area of PAC

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

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

$\Rightarrow$ Required area = $1/2(12 \times 3)\, sq.units$

Hence the required area is $\boxed{18}$ sq. unit

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