Exercise 3A

Question 19:

On a graph paper, draw horizontal line X'OX and a vertical line YOY' as x-axis and y-axis respectively.

The given system of equations is 2x - 5y + 4 = 0, 2x + y - 8 = 0

**Graph of 2x - 5y + 4 = 0:**

$2x - 5y + 4 = 0 \Rightarrow y = \frac{2x+4}{5} --(1)$

Thus, we have the following table for equation (1)

| x | 3 | -2 | 8 |
|---|---|---|---|
| y | 2 | 0 | 4 |

On the graph paper plot the points A (3, 2), B (-2, 0) and C (8, 4)
Join AB and AC to get BC
Thus, line BC is the graph of the equation 2x - 5y + 4 = 0

**Graph of 2x + y - 8 = 0:**

2x + y - 8 = 0⇒y = -2x + 8 ---(2)
Then, we have following table for equation (2)

| x | 3 | 1 | 2 |
|---|---|---|---|
| y | 2 | 6 | 4 |

On the same graph paper plot the points P (1, 6) and Q (2, 4)
The third point A (3, 2) has been already plotted.
Join PA.
Thus, line PA is the graph of 2x + y - 8 = 0

On extending the graph lines on both sides, we find that these graph lines intersect the y-axis at the point R(0, 8) and S(0, 0.8)

Question 20:

On a graph paper, draw horizontal line X'OX and a vertical line YOY' as x-axis and y-axis respectively.

The given system of equations is
4x - 5y - 20 = 0, 3x + 5y - 15 =0

**Graph of 4x - 5y - 20 = 0:**

$4x - 5y - 20 = 0 \Rightarrow y = \frac{4x-20}{5} ---(1)$

Thus, we have the following table for equation (1)

| x | 0 | 5 | 10 |
|---|---|---|---|
| y | -4 | 0 | 4 |

On the graph paper plot the points A(0, -4), B(5, 0) and C(10, 4)
Joint AB and BC to get AC
Thus, line AC is the graph of equation 4x - 5y - 20 = 0

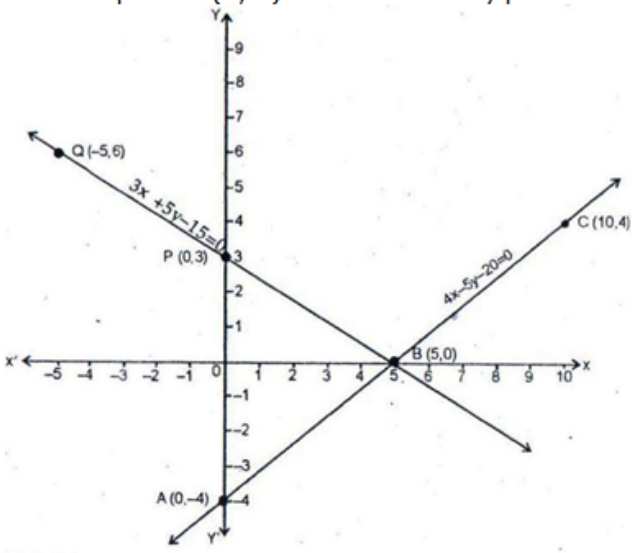
**Graph of 3x + 5y - 15 = 0:**

$3x + 5y - 15 = 0 \Rightarrow y = \frac{-3x+15}{5} ---(2)$

Thus, we have the following table for equation (2)

| x | 5 | 0 | -5 |
|---|---|---|---|
| y | 0 | 3 | 6 |

On the same graph paper plot the points P (0, 3) and Q (-5, 6).
The third point B (5, 0) has been already plotted in the graph.




Joint PQ and PB to get the line QB
Thus, line QB is the graph of equation 3x + 5y - 15 = 0
The two graph lines intersect at B(5, 0)
∴ x = 5, y = 0 is the solution of the given system of equations

Clearly, the vertices of ΔPBA formed by these lines and the y-axis are A (0, -4), B (5, 0) and P (0, 3)

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