Pair of Linear Equations in Two varibles Ex 3.5 Q27

Answer :

GIVEN:

$\alpha x + 3y = \alpha - 3$

$12x + \alpha y = \alpha$

To find: To determine for what value of k the system of equation has no solution

We know that the system of equations

$a_1x + b_1y = c_1$

$a_2x + b_2y = c_2$

For no solution

$\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$

Here,

$\frac{\alpha}{12} = \frac{3}{\alpha} \neq \frac{\alpha - 3}{\alpha}$

Consider the following for α

$\frac{\alpha}{12} = \frac{3}{\alpha}$

$\alpha^2 = 12 \times 3$

$\alpha^2 = 36$

$\alpha = \pm 6$

Now consider the following

$\frac{3}{\alpha} \neq \frac{\alpha - 3}{\alpha}$

$3\alpha \neq \alpha(\alpha - 3)$

$3\alpha \neq \alpha^2 - 3\alpha$

$6\alpha \neq \alpha^2$

$\alpha \neq 6$

Hence the common value of α is -6

Hence for α = -6 the system of equation has no solution

Pair of Linear Equations in Two varibles Ex 3.5 Q28

Answer :

GIVEN:

$kx+2y=5$

$3x+y=1$

To find: To determine for what value of k the system of equation has

(1) Unique solution

(2) No solution

We know that the system of equations

$a_1x+b_1y=c_1$

$a_2x+b_2y=c_2$

(1) For Unique solution

$$\frac{a_1}{a_2}\neq\frac{b_1}{b_2}$$

Here,

$$\frac{k}{3}\neq\frac{2}{1}$$

$$k\neq 6$$

Hence for $\boxed{k\neq 6}$ the system of equation has unique solution.

(2) For no solution

$$\frac{a_1}{a_2}=\frac{b_1}{b_2}\neq\frac{c_1}{c_2}$$

$$\frac{k}{3}=\frac{2}{1}\neq\frac{5}{1}$$

$$k=6$$

Hence for $\boxed{k=6}$ the system of equation has no solution

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