Pair of Linear Equations in Two varibles Ex 3.5 Q1

Answer :

GIVEN:

$x-3y=3$

$3x-9y=2$

To find: To determine whether the system has a unique solution, no solution or infinitely many solutions

We know that the system of equations

$a_1x+b_1y=c_1$

$a_2x+b_2y=c_2$

For unique solution

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

For no solution

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

For infinitely many solution

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

Here,

$\frac{1}{3}=\frac{3}{9}\neq\frac{3}{2}$

$\boxed{\frac{1}{3}=\frac{1}{3}\neq\frac{3}{2}}$

Since $\frac{a_1}{a_2}=\frac{b_1}{b_2}\neq\frac{c_1}{c_2}$ which means $\boxed{\frac{1}{3}=\frac{1}{3}\neq\frac{3}{2}}$ hence the system of equation has no solution.

Hence the system of equation has no solution

Pair of Linear Equations in Two varibles Ex 3.5 Q2

Answer :

GIVEN:

$2x+y=5$

$4x+2y=10$

To find: To determine whether the system has a unique solution, no solution or infinitely many solutions

We know that the system of equations

$a_1x+b_1y=c_1$

$a_2x+b_2y=c_2$

For unique solution

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

For no solution

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

For infinitely many solution

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

Here,

$\frac{2}{4}=\frac{1}{2}=\frac{5}{10}$

$\boxed{\frac{1}{2}=\frac{1}{2}=\frac{1}{2}}$

Since $\frac{a_1}{a_2}=\frac{b_1}{b_2}=\frac{c_1}{c_2}$ which means $\boxed{\frac{1}{2}=\frac{1}{2}=\frac{1}{2}}$ hence the system of equation has infinitely many solution.

Hence the system of equation has infinitely many solutions

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