



Pair of Linear Equations in Two variables 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 variables 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 *****

