



### Pair of Linear Equations in Two variables Ex 3.5 Q3

**Answer :**

GIVEN:

$$3x - 5y = 20$$

$$6x - 10y = 40$$

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,

$$\frac{3}{6} = \frac{-5}{-10} = \frac{20}{40}$$

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

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

### Pair of Linear Equations in Two variables Ex 3.5 Q4

**Answer :**

GIVEN:

$$x - 2y = 8$$

$$5x - 10y = 10$$

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,

$$\frac{1}{5} = \frac{-2}{-10} = \frac{8}{10}$$

$$\boxed{\frac{1}{5} = \frac{1}{5} \neq \frac{2}{5}}$$

Since  $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$  which means  $\boxed{\frac{1}{5} = \frac{1}{5} \neq \frac{2}{5}}$  hence the system of equation has no solution.

Hence the system of equation has no solution

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