



### Pair of Linear Equations in Two variables Ex 3.5 Q9

**Answer :**

GIVEN:

$$2x + 3y - 5 = 0$$

$$6x + ky - 15 = 0$$

To find: To determine for what value of  $k$  the system of equation has infinitely many solutions

We know that the system of equations

$$a_1x + b_1y = c_1$$

$$a_2x + b_2y = c_2$$

For infinitely many solution

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

Here,

$$\frac{2}{6} = \frac{3}{k} = \frac{-5}{-15}$$

$$\frac{2}{6} = \frac{3}{k}$$

$$k = \frac{3 \times 6}{2}$$

$$k = 3 \times 3$$

$$k = 9$$

Hence for  $k = 9$  the system of equation have infinitely many solutions

### Pair of Linear Equations in Two variables Ex 3.5 Q10

**Answer :**

GIVEN:

$$4x + 5y = 3$$

$$kx + 15y = 9$$

To find: To determine for what value of  $k$  the system of equation has infinitely many solutions

We know that the system of equations

$$a_1x + b_1y = c_1$$

$$a_2x + b_2y = c_2$$

For infinitely many solution

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

Here,

$$\frac{4}{k} = \frac{5}{15} = \frac{3}{9}$$

$$\frac{4}{k} = \frac{5}{15}$$

$$k = \frac{4 \times 15}{5}$$

$$k = 4 \times 3$$

$$k = 12$$

Hence for  $k = 12$  the system of equation have infinitely many solutions.

### Pair of Linear Equations in Two variables Ex 3.5 Q11

**Answer :**

GIVEN:

$$kx - 2y + 6 = 0$$

$$4x - 3y + 9 = 0$$

To find: To determine for what value of  $k$  the system of equation has infinitely many solutions

We know that the system of equations

$$a_1x + b_1y = c_1$$

$$a_2x + b_2y = c_2$$

For infinitely many solution

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

Here,

$$\frac{k}{4} = \frac{-2}{-3} = \frac{6}{9}$$

$$\frac{k}{4} = \frac{-2}{-3}$$

$$k = \frac{4 \times 2}{3}$$

$$k = \frac{8}{3}$$

Hence for  $k = \frac{8}{3}$  the system of equation have infinitely many solutions.

Pair of Linear Equations in Two variables Ex 3.5 Q12

**Answer :**

GIVEN:

$$8x + 5y = 9$$

$$kx + 10y = 18$$

To find: To determine for what value of  $k$  the system of equation has infinitely many solutions

We know that the system of equations

$$a_1x + b_1y = c_1$$

$$a_2x + b_2y = c_2$$

For infinitely many solution

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

Here,

$$\frac{8}{k} = \frac{5}{10} = \frac{9}{18}$$

$$\frac{8}{k} = \frac{5}{10}$$

$$k = \frac{8 \times 10}{5}$$

$$k = 8 \times 2$$

$$k = 16$$

Hence for  $k = 16$  the system of equation have infinitely many solutions

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