

GATE 2018 SYLLABI

Unique, Infinite, Many, Consistent, Inconsistent Solutions ?

$$1) a_1x + b_1y = c_1$$

$$2) a_2x + b_2y = c_2$$

If

$$a_1/a_2 \neq b_1/b_2$$

Then, its called unique solution. it means intercepting lines. Its also called consistent solution.

If

$$a_1/a_2 = b_1/b_2 \neq c_1/c_2$$

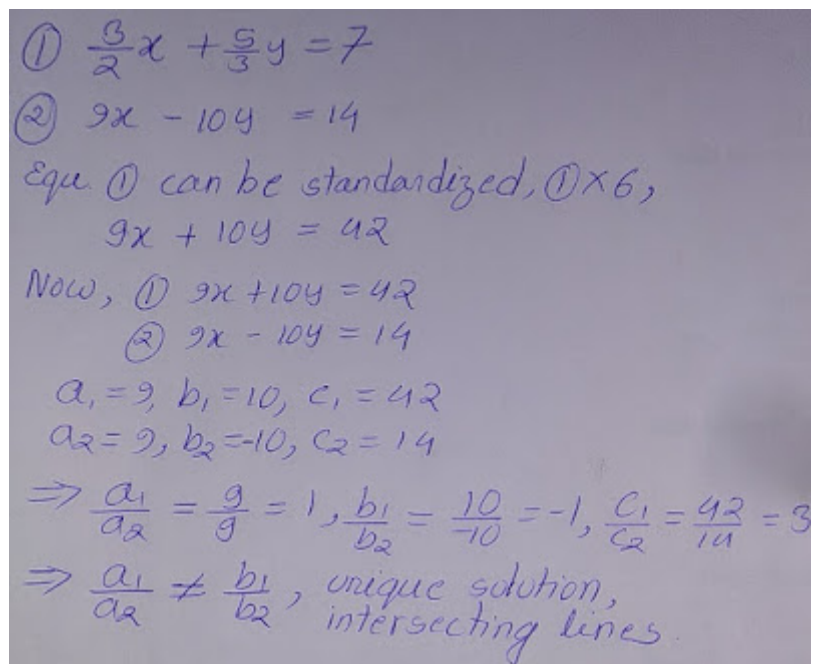
Then its called no solution. It means parallel lines. Its also called inconsistent solution.

If

$$a_1/a_2 = b_1/b_2 = c_1/c_2$$

Then, its called infinite many soluiton. It means coincident lines. Its also called consistent solution.

For example-



① $\frac{3}{2}x + \frac{5}{3}y = 7$
② $9x - 10y = 14$
Equ ① can be standardized, ① $\times 6$,
 $9x + 10y = 42$
Now, ① $9x + 10y = 42$
② $9x - 10y = 14$
 $a_1 = 9, b_1 = 10, c_1 = 42$
 $a_2 = 9, b_2 = -10, c_2 = 14$
 $\Rightarrow \frac{a_1}{a_2} = \frac{9}{9} = 1, \frac{b_1}{b_2} = \frac{10}{-10} = -1, \frac{c_1}{c_2} = \frac{42}{14} = 3$
 $\Rightarrow \frac{a_1}{a_2} \neq \frac{b_1}{b_2}$, unique solution,
intersecting lines.

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