Note - Aapke syllabus me ab - only -

1. Graphical method ✓
2. Substitution method ✓
3. Elimination method ✓

Hi bacha hai. to aap logo ko bas in teen methods ko properly samajhana hai.

Important formula

1. If pair of linear equations is given by $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$, then the following situations can arise:

(i) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$ ⇒ Equations Consistant

(ii) $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$ ⇒ Equations is inconsistant

(iii) $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ ⇒ Dependent & Consistant

2. A pair of linear equations in two Variables is represented, and solved by the graphical method, Algebric method.

(1). Solve the following pair of linear equations by the elimination method and the substitution method.:

(i) $x+y=5$ and $2x-3y=4$.

Solution:-

(I) By Elimination method :-

$$x+y=5 \quad \text{——— (1)}$$

$$2x-3y=4 \quad \text{——— (2)}$$

multiply by 2 in equation (1) then we get. $2x+2y=10$ ——— (3)

Now taking equation (2) & (3).

$$\begin{array}{r} 2x-3y=4 \\ 2x+2y=10 \\ \hline 0 \quad -3y-2y=4-10 \end{array}$$

$$-5y=-6$$

$$y=\frac{+6}{+5}$$

$$\boxed{y=\frac{6}{5}}$$

HINT
Yaha humne equation (2)−(3) kiya hai jisse x wala part Eliminate ho gaya hai. OK.

Yaha aap kisi bhi equation me value rakh sakte hai.

Putting this value of y in equation (1)

$$x + y = 5$$

$$x + \frac{6}{5} = 5$$

$$x = 5 - \frac{6}{5}$$

Hint

$\frac{5 \times 5}{5} - \frac{6}{5} = \frac{19}{5}$

$$x = \frac{25 - 6}{5}$$

$$x = \frac{19}{5}$$

Solution :- $x = \frac{19}{5}$, $y = \frac{6}{5}$. Ans.

(II) By substitution method :-

Again By equation ① & ②

$$x + y = 5 \quad \text{——} ①$$

$$2x - 3y = 4 \quad \text{——} ②$$

Using equation ① :

$$x + y = 5$$

$$x = 5 - y \quad \text{——} ③$$

Puting the value of x from equation ③ to ②

yaha aap 'x' ke liye ya 'y' ke liye solve kar lo koi problem nahi hai

Agar aapne equation ① se 'x' or 'y' ki value nikali hai to use ② me Rakhna & vice verce

$$2[5-y]-3y=4$$

$$10-2y-3y=4$$

$$10-5y=4$$

$$-5y=4-10 \Rightarrow -6$$

$$y=\frac{+6}{+5}$$

$$\boxed{y=\frac{6}{5}}$$

Similary, put this value in equation ① for the value of 'x'. you can put the value of y in equation ③ directly. you get the correct value of 'x'.

$$x=5-\frac{6}{5}$$

$$x=\frac{25-6}{5}$$

$$\boxed{x=\frac{19}{5}}$$

'OR' $x+y=5$

$$x+\frac{6}{5}=5$$

$$x=5-\frac{6}{5}$$

$$\boxed{x=\frac{19}{5}}$$

Hence, final Answer is same you can check. that by the both methods So, required Solutions are.

$$x=\frac{19}{5} \quad \text{and} \quad y=\frac{6}{5}$$

(ii) $\frac{x}{2} + \frac{2y}{3} = -1$ and $x - \frac{y}{3} = 3$

(I) By elimination method:-

Given that :

$$\frac{x}{2} + \frac{2y}{3} = -1$$

or, $$\frac{3x + 4y}{6} = -1$$

$$3x + 4y = -6 \quad \text{——— (1)}$$

Similarly,

$$x - \frac{y}{3} = 3$$

$$\frac{3x - y}{3} = 3$$

$$3x - y = 9 \quad \text{——— (2)}$$

Now by (1) and (2) Just subtract the equation (2) from equation (1) :-

sign-change.
$+ \to -$
$- \to +$

$$3x + 4y = -6$$
$$3x - y = 9$$
$$- \quad + \quad -$$

$$0 \quad 4y + y = -6 - 9$$

$$5y = -15$$

$$y = -15/5 \Rightarrow -3$$

Sign always changes During subtraction OK. beta.

$y = -3$ Ans.

Putting this value in equation (2).

$3x - y = 9$

$3x - (-3) = 9$

$3x + 3 = 9$

$3x = 9 - 3$

$3x = 6$

$x = \frac{6}{3}^{2}$

$x = 2$ Ans.

Aap kisi bhi equation me value rakh sakte hai

Remember

Value aisi equation me rakhni chahiye jisme kam se kam multiply karna ho. —mathangles

(II) By substitution method:-

use equation (1)

$3x - y = 9$

$-y = 9 - 3x$

$y = 3x - 9$ ——— (3)

use this value of y in (1).

$3x + 4[3x - 9] = -6$

$3x + 12x - 36 = -6$

$15x = 36 - 6$

$15x = 30$

$x = \frac{30}{15}^{2}$

$x = 2$ Ans.

Rembember

Substitution ka matlab hai ki ek equation se value dusri equation me rakhkar 'x' & 'y' ki value nikalna.

Jaldi hi online batch banayege agar aapko padhna ho to join kar lena