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Class: -X

Subject: -Mathematics

Solution of a Pair of Linear Equations in Two Variables

The solution of a linear equation in two variables 'x' and 'y' is a pair of values which satisfies both the equations simultaneously.

There are two methods to solve a pair of linear equations:

(i) **Algebraic method**

(ii) **Graphical method.**

Algebraic Method

Finding solution for consistent pair of Linear Equations

- i) Substitution Method
- ii) Elimination method
- iii) Cross-multiplication method

(I) Substitution Method of finding solution of a pair of Linear Equations

Substitution method:

$$y - 2x = 1 \text{ ----- (1)}$$

$$x + 2y = 12 \text{ ----- (2)}$$

From Equation (1)

$$y - 2x = 1$$

$$\text{? } y = 1 + 2x \text{ ----- (3)}$$

Putting the value of y in equation (2)

$$\text{? } x + 2y = 12$$

$$\text{? } x + 2(1 + 2x) = 12$$

$$\text{? } x + 2 + 4x = 12$$

$$\text{? } 5x = 12 - 2$$

$$\text{? } 5x = 10$$

$$\text{? } x = 2$$

Again putting the value x in equation (3)

$$\text{? } y = 1 + 2x$$

$$\text{? } y = 1 + 2 \times 2 = 5$$

Hence $x = 2$ and $y = 5$ *Answer*

Check $y - 2x = 1$? $5 - 2 \times 2 = 1$? $1 = 1$

(Putting $x = 2$ and $y = 5$)

$x + 2y = 12$? $2 + 2 \times 5 = 12$? $12 = 12$

(Putting $x = 2$ and $y = 5$)

Satisfied both the equations simultaneously

DO YOUR SELF

Solve given equations based on the conditions or situations

(1) $x + y = 3$

(2) $x - 2y = 5$

(3) $3x + y + 1 = 0$

$2x - 5y = 12$

$2x + 3y = 10$

$2x - 3y + 8 = 0$

(4) $11x + 15y = -24$

(5) $0.4x + 0.3y = 1.7$

$7x - 2y - 20 = 0$

$0.7x - 0.2y = 0.8$

(6) $7(y + 3) - 2(x + 2) = 14$

$4(y - 2) + 3(x - 3) = 2$