

D-1

Solve the simultaneous equations by substitution method:

$$1.) \begin{cases} 2x + 3y = 9 \\ 3x + 4y = 5 \end{cases}$$

$$2.) \begin{cases} 3x - 5y = 4 \\ 9x - 2y = 7 \end{cases}$$

$$3.) \begin{cases} 2x - 3y = 3 \\ 4 \end{cases}$$

$$5x - 2y - 7 = 0$$

4). Solve  $2x + y = 35$ ,  $3x + 4y = 65$ . Hence, find the value of  $\frac{x}{y}$ .

Method 2: Elimination method:

steps of working:

1. Multiply one or both equations (if necessary) by a suitable number(s) to transform them, so that addition or subtraction will eliminate one variable.
2. Solve the resulting single variable equation and substitute this value into either of the two original equations.
3. Solve it to find the value of the second variable.

for eg -

$$\text{Solve the eq}^n \quad \begin{array}{l} 3x - 4y = 10 \quad \text{--- (1)} \\ 5x - 3y = 24 \quad \text{--- (2)} \end{array}$$

$$\Rightarrow (3x - 4y = 10) \times 5 \Rightarrow 15x - 20y = 50$$

$$(5x - 3y = 24) \times 3 \Rightarrow 15x - 9y = 72$$

$$-11y = -22 \Rightarrow y = \frac{-22}{-11} = 2$$

put in either of eq<sup>n</sup> (1) or (2). let us say eq<sup>n</sup> (1)  $\Rightarrow 3x - 4y = 10$

$$\Rightarrow 3x - 4(2) = 10$$

$$3x - 8 = 10$$

$$3x = 10 + 8$$

$$3x = 18$$

$$x = \frac{18}{3}$$

$$\therefore \left. \begin{array}{l} x = 6 \\ y = 2 \end{array} \right\} \text{Ans.}$$

Solve the simultaneous equations by the elimination method :

$$\begin{aligned} 5. \quad & 3x + 4y = 10 \\ & 2x - 2y = 2 \end{aligned}$$

$$\begin{aligned} 6. \quad & 2x - 5y = 4 \\ & 3x - 2y = -16 \end{aligned}$$

$$\begin{aligned} 7. \quad & 2x + y = 23 \\ & 4x - y = 19 \end{aligned}$$

$$\begin{aligned} 8. \quad & 2x + 3y = 17 \\ & 3x - 2y = 6 \end{aligned}$$

$$\begin{aligned} 9. \quad & 4x - 3y = 0 \\ & 2x + 3y = 18 \end{aligned}$$