$$= \frac{\cancel{3 \cdot 2}^{4}}{\cancel{2 \cdot 4}^{3}}$$

$$= \frac{4}{3}$$

$\therefore$ LHS$=$RHS

Hence, $x=2$ is a solution of the given equation.

Q16

Answer :

We have:

$$\frac{3x-1}{5} - \frac{x}{7} = 3$$

$$\Rightarrow \frac{7(3x-1)-5\times x}{35} = 3$$

$$\Rightarrow \left(\frac{21x-7-5x}{35} \right) = 3$$

$$\Rightarrow \left(\frac{16x-7}{35} \right) = 3$$

$\Rightarrow 16x - 7 = 3 \times 35$ $\qquad$ (Transposing 35 to RHS)

$\Rightarrow 16x - 7 = 105$

$\Rightarrow 16x = 105 + 7$

$\Rightarrow 16x = 112$

$$\Rightarrow x = \frac{\cancel{112}^{7}}{\cancel{16}^{1}}$$

$\Rightarrow x = 7$

CHECK: Substituting $x=7$ in the given equation, we get:

LHS$= \frac{3x-1}{5} - \frac{x}{7}$

$$= \frac{7(3x-1)-5\times x}{35}$$

$$= \left(\frac{21x - 7 - 5x}{35} \right)$$

$$= \left(\frac{16x - 7}{35} \right)$$

$$= \left(\frac{16 \times 7 - 7}{35} \right)$$

$$= \frac{112 - 7}{35}$$

$$= \frac{\cancel{105}^{3}}{\cancel{35}^{1}}$$

$$= 3$$

RHS=3

$\therefore$ LHS=RHS

Hence, $x=3$ is a solution of the given equation.

Q17

Answer :

We have:

$$2x - 3 = \frac{3}{10}\left(5x - 12\right)$$

$\Rightarrow 10(2x - 3) = 3(5x - 12)$

$\Rightarrow 20x - 30 = 15x - 36$

$\Rightarrow 20x - 15x = -36 + 30$ (Transposing $15x$ to LHS and -30 to RHS)

$\Rightarrow 5x = -6$

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

CHECK: Substituting $x = \frac{-6}{5}$ in the given equation, we get:

LHS=$2x - 3$

$$= 2 \times \left(\frac{-6}{5} \right) - 3$$

$$= \frac{-12}{5} - 3$$

$$= \frac{-12 - (3 \times 5)}{5}$$
$$= \frac{-12 - 15}{5}$$
$$= \frac{-27}{5}$$

$$\text{RHS} = \frac{3}{10} \left(5x - 12 \right)$$
$$= \frac{3}{10} \left(5^{1} \times \frac{-6}{5^{1}} - 12 \right)$$
$$= \frac{3}{10} \times \left(-18 \right)$$
$$= \frac{3}{10^{5}} \times -18^{9}$$
$$= \frac{-27}{5}$$

$\therefore$ LHS=RHS

Hence, $x = \frac{-6}{5}$ is a solution of the given equation.

Q18

Answer :

We have:
$$\frac{y-1}{3} - \frac{y-2}{4} = 1$$
$$\Rightarrow \frac{4(y-1) - 3(y-2)}{12} = 1$$
$$\Rightarrow \left(\frac{4y - 4 - 3y + 6}{12} \right) = 1$$
$$\Rightarrow \left(\frac{y+2}{12} \right) = 1$$
$$\Rightarrow y + 2 = 1 \times 12$$
$$\Rightarrow y = 12 - 2$$
$$\Rightarrow y = 10$$

CHECK: Substituting y=10 in the given equation, we get:

$$\text{LHS} = \frac{y-1}{3} - \frac{y-2}{4}$$

$$= \frac{4(y-1) - 3(y-2)}{12}$$

$$= \left(\frac{y+2}{12}\right)$$

$$= \left(\frac{10+2}{12}\right)$$

$$= \frac{\cancel{12}^{1}}{\cancel{12}^{1}}$$

$$= 1$$

RHS = 1

∴ LHS = RHS

Hence, y = 10 is a solution of the given equation.

Q19

Answer:

We have:

$$\frac{x-2}{4} + \frac{1}{3} = x - \frac{2x-1}{3}$$

$$\Rightarrow \frac{x-2}{4} + \frac{2x-1}{3} - x = -\frac{1}{3} \qquad \left(\text{Transposing} -\frac{2x-1}{3} \text{ to LHS and } \frac{1}{3} \text{ to RHS}\right)$$

$$\Rightarrow \left(\frac{3(x-2) + 4(2x-1) - 12x}{12}\right) = -\frac{1}{3}$$

$$\Rightarrow \left(\frac{3x - 6 + 8x - 4 - 12x}{12}\right) = -\frac{1}{3}$$

$$\Rightarrow 11x - 12x - 10 = -\frac{1}{\cancel{3}^{1}} \times \cancel{12}^{4}$$

$$\Rightarrow -x = -4 + 10$$

$$\Rightarrow -x = 6$$

$$\Rightarrow x = -6$$

CHECK: Substituting $x = -6$ in the given equation, we get:

$$\text{LHS} = \frac{x-2}{4} + \frac{1}{3}$$
$$= \frac{-6-2}{4} + \frac{1}{3}$$
$$= -2 + \frac{1}{3}$$
$$= \frac{-5}{3}$$

$$\text{RHS} = x - \frac{2x-1}{3}$$
$$= -6 - \frac{2 \times (-6) - 1}{3}$$
$$= -6 - \frac{(-13)}{3}$$
$$= -6 + \frac{13}{3}$$
$$= \frac{-5}{3}$$

$\therefore$ LHS=RHS

Hence, y=10 is a solution of the given equation.

Q20

Answer :

We have:

$$\frac{2x-1}{3} - \frac{6x-2}{5} = \frac{1}{3}$$
$$\Rightarrow \frac{5(2x-1) - 3(6x-2)}{15} = \frac{1}{3}$$
$$\Rightarrow \frac{10x - 5 - 18x + 6}{15} = \frac{1}{3}$$
$$\Rightarrow \frac{-8x+1}{15} = \frac{1}{3}$$
$$\Rightarrow -8x + 1 = \frac{1}{3} \times 15$$
$$\Rightarrow -8x = 5 - 1$$
$$\Rightarrow -x = \frac{4}{8}$$
$$\Rightarrow x = -\frac{2}{4} = \frac{-1}{2}$$

CHECK: Substituting $x = -\frac{1}{2}$ in the given equation, we get:

$$LHS = \frac{2x-1}{3} - \frac{6x-2}{5}$$

$$= \frac{-8x+1}{15}$$

$$= \frac{-8 \times \left(-\frac{1}{2}\right) + 1}{15}$$

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

$$= \frac{1}{3}$$

$$RHS = \frac{1}{3}$$

$$\therefore LHS = RHS$$

Hence, $y = -\frac{1}{2}$ is a solution of the given equation.

Q21

Answer :

We have:

$$\frac{y+7}{3} = 1 + \frac{3y-2}{5}$$

$$\Rightarrow \frac{y+7}{3} = \frac{5 \times 1 + 3y - 2}{5}$$

$$\Rightarrow 5(y+7) = 3(3+3y)$$

$$\Rightarrow 5y + 35 = 9 + 9y$$

$$\Rightarrow 9y - 5y = 35 - 9$$

$$\Rightarrow 4y = 26$$

$$\Rightarrow y = \frac{13}{2}$$

CHECK: Substituting $x = \frac{13}{2}$ in the given equation, we get:

$$LHS = \frac{y+7}{3}$$

********** END *********