



Linear equations in one variable Ex 8.3 Q7

Answer :

$$3x - 2(2x - 5) = 2(x + 3) - 8$$

On expanding the brackets on both sides, we get

$$\Rightarrow 3x - 2 \times 2x + 2 \times 5 = 2 \times x + 2 \times 3 - 8$$

$$\Rightarrow 3x - 4x + 10 = 2x + 6 - 8$$

$$\Rightarrow -x + 10 = 2x - 2$$

Transposing x to RHS and 2 to LHS, we get

$$\Rightarrow 10 + 2 = 2x + x$$

$$\Rightarrow 3x = 12$$

Dividing both sides by 3, we get

$$\Rightarrow \frac{3x}{3} = \frac{12}{3}$$

$$\Rightarrow x = 4$$

Verification:

Substituting $x = 4$ on both sides, we get

$$3(4) - 2(2(4) - 5) = 2(4 + 3) - 8$$

$$12 - 2(8 - 5) = 14 - 8$$

$$12 - 6 = 6$$

$$6 = 6$$

$$\text{LHS} = \text{RHS}$$

Hence, verified.

Linear equations in one variable Ex 8.3 Q8

Answer :

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

Transposing $\frac{x}{4}$ to LHS and $-\frac{1}{2}$ to RHS, we get

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

$$\Rightarrow \frac{4x - x - x}{4} = \frac{6 + 1}{2}$$

$$\Rightarrow \frac{2x}{4} = \frac{7}{2}$$

Multiplying both sides by 4, we get

$$\Rightarrow \frac{2x}{4} \times 4 = \frac{7}{2} \times 4$$

$$\Rightarrow 2x = 14$$

Dividing both sides by 2, we get

$$\Rightarrow \frac{2x}{2} = \frac{14}{2}$$

$$\Rightarrow x = 7$$

Verification:

Substituting $x = 7$ on both sides, we get

$$7 - \frac{7}{4} - \frac{1}{2} = 3 + \frac{7}{4}$$

$$\frac{28 - 7 - 2}{4} = \frac{12 + 7}{4}$$

$$\frac{19}{4} = \frac{19}{4}$$

LHS = RHS

Hence, verified.

Answer :

$$\begin{aligned}\frac{6x-2}{9} + \frac{3x+5}{18} &= \frac{1}{3} \\ \Rightarrow \frac{6x \times 2 - 2 \times 2 + 3x + 5}{18} &= \frac{1}{3} \\ \Rightarrow \frac{12x - 4 + 3x + 5}{18} &= \frac{1}{3} \\ \Rightarrow \frac{15x + 1}{18} &= \frac{1}{3}\end{aligned}$$

Multiplying both sides by 18, we get

$$\begin{aligned}\Rightarrow \frac{15x+1}{18} \times (18) &= \frac{1}{3} \times (18) \\ \Rightarrow 15x + 1 &= 6\end{aligned}$$

Transposing 1 to RHS, we get

$$\begin{aligned}\Rightarrow 15x &= 6 - 1 \\ \Rightarrow 15x &= 5\end{aligned}$$

Dividing both sides by 15, we get

$$\begin{aligned}\Rightarrow \frac{15x}{15} &= \frac{5}{15} \\ \Rightarrow x &= \frac{1}{3}\end{aligned}$$

Verification:

Substituting $x = \frac{1}{3}$ on both sides, we get

$$\begin{aligned}\frac{6\left(\frac{1}{3}\right)-2}{9} + \frac{3\left(\frac{1}{3}\right)+5}{18} &= \frac{1}{3} \\ \frac{2-2}{9} + \frac{1+5}{18} &= \frac{1}{3} \\ 0 + \frac{6}{18} &= \frac{1}{3} \\ \frac{1}{3} &= \frac{1}{3}\end{aligned}$$

LHS = RHS

Hence, verified.

Answer :

$$\begin{aligned}m - \frac{m-1}{2} &= 1 - \frac{m-2}{3} \\ \Rightarrow \frac{2m - m - (-1)}{2} &= \frac{3 - m - (-2)}{3} \\ \Rightarrow \frac{m+1}{2} &= \frac{3-m+2}{3} \\ \Rightarrow \frac{m+1}{2} &= \frac{5-m}{3} \\ \Rightarrow \frac{m}{2} + \frac{1}{2} &= \frac{5}{3} - \frac{m}{3}\end{aligned}$$

Transposing $m/3$ to LHS and $1/2$ to RHS, we get

$$\begin{aligned}\Rightarrow \frac{m}{2} + \frac{m}{3} &= \frac{5}{3} - \frac{1}{2} \\ \Rightarrow \frac{3m+2m}{6} &= \frac{10-3}{6}\end{aligned}$$

Multiplying both sides by 6, we get

$$\begin{aligned}\Rightarrow \frac{5m}{6} \times 6 &= \frac{7}{6} \times 6 \\ \Rightarrow 5m &= 7\end{aligned}$$

Dividing both sides by 5, we get

$$\begin{aligned}\Rightarrow \frac{5m}{5} &= \frac{7}{5} \\ \Rightarrow m &= \frac{7}{5}\end{aligned}$$

Verification:

Substituting $m = \frac{7}{5}$ on both sides, we get

$$\begin{aligned}\frac{7}{5} - \frac{\frac{7}{5}-1}{2} &= 1 - \frac{\frac{7}{5}-2}{3} \\ \frac{7}{5} - \frac{\frac{7-5}{5}}{2} &= 1 - \frac{\frac{7-10}{5}}{3} \\ \frac{7}{5} - \frac{2}{5 \times 2} &= 1 - \frac{-3}{5 \times 3} \\ \frac{7}{5} - \frac{1}{5} &= 1 + \frac{1}{5} \\ \frac{6}{5} &= \frac{6}{5}\end{aligned}$$

LHS = RHS

Hence, verified.

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