



Linear Equations in One Variable Ex 9.2 Q21

Answer :

$$\frac{7x-1}{4} - \frac{1}{3} \left(2x - \frac{1-x}{2} \right) = \frac{10}{3}$$

$$\text{or } \frac{7x-1}{4} - \frac{2x}{3} + \frac{1-x}{6} = \frac{10}{3}$$

$$\text{or } \frac{21x-3-8x+2-2x}{12} = \frac{10}{3}$$

$$\text{or } 11x - 1 = 40 \quad \left[\text{Multiplying both sides by 12} \right]$$

$$\text{or } 11x = 40 + 1$$

$$\text{or } x = \frac{41}{11}$$

Thus, $x = \frac{41}{11}$ is the solution of the given equation.

Check :

Substituting $x = \frac{41}{11}$ in the given equation, we get :

$$\text{L.H.S.} = \frac{7 \times \frac{41}{11} - 1}{4} - \frac{1}{3} \left(2 \times \frac{41}{11} - \frac{1 - \frac{41}{11}}{2} \right) = \frac{276}{44} - \frac{82}{33} + \frac{-30}{66} = \frac{10}{3}$$

$$\text{R.H.S.} = \frac{10}{3}$$

$$\therefore \text{L.H.S.} = \text{R.H.S. for } x = \frac{41}{11}$$

Linear Equations in One Variable Ex 9.2 Q22

Answer :

$$\frac{0.5(x-0.4)}{0.35} - \frac{0.6(x-2.71)}{0.42} = x + 6.1$$

$$\text{or } \frac{(x-0.4)}{0.7} - \frac{(x-2.71)}{0.7} = x + 6.1$$

$$\text{or } \frac{x-0.4-x+2.71}{0.7} = x + 6.1$$

$$\text{or } -0.4 + 2.71 = 0.7x + 4.27$$

$$\text{or } 0.7x = 2.71 - 0.4 - 4.27$$

$$\text{or } x = \frac{-1.96}{0.7} = -2.8$$

Thus, $x = -2.8$ is the solution of the given equation.

Check :

Substituting $x = -2.8$ in the given equation, we get :

$$\text{L.H.S.} = \frac{0.5(-2.8-0.4)}{0.35} - \frac{0.6(-2.8-2.71)}{0.42} = \frac{-1.6}{0.35} + \frac{3.306}{0.42} = -4.571 + 7.871 = 3.3$$

$$\text{R.H.S.} = -2.8 + 6.1 = -3.3$$

$$\therefore \text{L.H.S.} = \text{R.H.S. for } x = -2.8$$

Linear Equations in One Variable Ex 9.2 Q23

Answer :

$$6.5x + \frac{19.5x-32.5}{2} = 6.5x + 13 + \frac{13x-26}{2}$$

$$\text{or } \frac{19.5x-32.5}{2} - \frac{13x-26}{2} = 13$$

$$\text{or } \frac{19.5x-32.5-13x+26}{2} = 13$$

$$\text{or } 6.5x - 6.5 = 26 \quad [\text{After cross multiplication}]$$

$$\text{or } 6.5x = 26 + 6.5$$

$$\text{or } x = \frac{32.5}{6.5} = 5$$

Thus, $x = 5$ is the solution of the given equation.

Check :

Substituting $x = 5$ in the given equation, we get :

$$\text{L.H.S.} = 6.5 \times 5 + \frac{19.5 \times 5 - 32.5}{2} = 65$$

$$\text{R.H.S.} = 6.5 \times 5 + 13 + \frac{13 \times 5 - 26}{2} = 65$$

$$\therefore \text{L.H.S.} = \text{R.H.S. for } x = 5.$$

Linear Equations in One Variable Ex 9.2 Q24

Answer :

$$(3x-8)(3x+2) - (4x-11)(2x+1) = (x-3)(x+7)$$

$$\text{or } 9x^2 + 6x - 24x - 16 - 8x^2 - 4x + 22x + 11 = x^2 + 7x - 3x - 21$$

$$\text{or } x^2 - 5 = x^2 + 4x - 21$$

$$\text{or } 4x = -5 + 21$$

$$\text{or } x = \frac{16}{4} = 4$$

Thus, $x = 4$ is the solution of the given equation.

Check :

Substituting $x = 4$ in the given equation, we get :

$$\text{L.H.S.} = (3 \times 4 - 8)(3 \times 4 + 2) - (4 \times 4 - 11)(2 \times 4 + 1) = 4 \times 14 - 5 \times 9 = 11$$

$$\text{R.H.S.} = (4 - 3)(4 + 7) = 11$$

$$\therefore \text{L.H.S.} = \text{R.H.S. for } x = 4.$$

Linear Equations in One Variable Ex 9.2 Q25

Answer :

$$\left[\left(2x + 3 \right) + \left(x + 5 \right) \right]^2 + \left[\left(2x + 3 \right) - \left(x + 5 \right) \right]^2 = 10x^2 + 92$$

$$\text{or } \left(3x + 8 \right)^2 + \left(x - 2 \right)^2 = 10x^2 + 92$$

$$\text{or } 9x^2 + 48x + 64 + x^2 - 4x + 4 = 10x^2 + 92$$

$$\left[\left(a + b \right)^2 = a^2 + b^2 + 2ab \text{ and } \left(a - b \right)^2 = a^2 + b^2 - 2ab \right]$$

$$\text{or } 10x^2 - 10x^2 + 44x = 92 - 68$$

$$\text{or } x = \frac{24}{44}$$

$$\text{or } x = \frac{6}{11}$$

Thus, $x = \frac{6}{11}$ is the solution of the given equation.

Check :

Substituting $x = \frac{6}{11}$ in the given equation, we get :

$$\begin{aligned} \text{L.H.S.} &= \left[\left(2 \times \frac{6}{11} + 3 \right) + \left(\frac{6}{11} + 5 \right) \right]^2 + \left[\left(2 \times \frac{6}{11} + 3 \right) - \left(\frac{6}{11} + 5 \right) \right]^2 \\ &= \left[\left(\frac{45}{11} \right) + \left(\frac{61}{11} \right) \right]^2 + \left[\left(\frac{45}{11} \right) - \left(\frac{61}{11} \right) \right]^2 \\ &= \left(\frac{106}{11} \right)^2 + \left(\frac{-16}{11} \right)^2 \\ &= \frac{11492}{121} \end{aligned}$$

$$\text{R.H.S.} = 10 \times \left(\frac{6}{11} \right)^2 + 92 = \frac{360}{121} + 92 = \frac{11492}{121}$$

$$\therefore \text{L.H.S.} = \text{R.H.S. for } x = \frac{6}{11}$$

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