



Linear Equations in One Variable Ex 9.3 Q11

Answer :

$$\frac{2}{3x} - \frac{3}{2x} = \frac{1}{12}$$

$$\text{or, } \frac{4-9}{6x} = \frac{1}{12}$$

$$\text{or, } \frac{-5}{x} = \frac{1}{2}$$

$$\text{or, } x = -10 \quad \left[\text{After cross multiplication} \right]$$

Thus, $x = -10$ is the solution of the given equation.

Check :

Substituting $x = -10$ in the given equation, we get :

$$\text{L.H.S.} = \frac{2}{3(-10)} - \frac{3}{2(-10)} = \frac{2}{-30} - \frac{3}{-20} = \frac{4-9}{-60} = \frac{-5}{-60} = \frac{1}{12}$$

$$\text{R.H.S.} = \frac{1}{12}$$

$\therefore \text{L.H.S.} = \text{R.H.S. for } x = -10.$

Linear Equations in One Variable Ex 9.3 Q12

Answer :

$$\frac{3x+5}{4x+2} = \frac{3x+4}{4x+7}$$

$$\text{or, } 12x^2 + 20x + 21x + 35 = 12x^2 + 16x + 6x + 8 \quad \left[\text{Cross multiply} \right]$$

$$\text{or, } 12x^2 - 12x^2 + 41x - 22x = 8 - 35$$

$$\text{or, } 19x = -27$$

$$\text{or, } x = \frac{-27}{19}$$

Thus, $x = \frac{-27}{19}$ is the solution of the given equation

Check :

Substituting $x = \frac{-27}{19}$ in the given equation, we get :

$$\text{L.H.S.} = \frac{3\left(\frac{-27}{19}\right) + 5}{4\left(\frac{-27}{19}\right) + 2} = \frac{-81+95}{-108+38} = \frac{14}{-70} = \frac{-1}{5}$$

$$\text{R.H.S.} = \frac{3\left(\frac{-27}{19}\right) + 4}{4\left(\frac{-27}{19}\right) + 7} = \frac{-81+76}{-108+133} = \frac{-5}{25} = \frac{-1}{5}$$

$\therefore \text{L.H.S.} = \text{R.H.S. for } x = \frac{-27}{19}$

Linear Equations in One Variable Ex 9.3 Q13

Answer :

$$\frac{7x-2}{5x-1} = \frac{7x+3}{5x+4}$$

$$\text{or } 35x^2 + 28x - 10x - 8 = 35x^2 + 15x - 7x - 3 \quad \left[\text{After cross multiplication} \right]$$

$$\text{or } 35x^2 - 35x^2 + 18x - 8x = -3 + 8$$

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

$$\text{or } x = \frac{5}{10} \text{ or } x = \frac{1}{2}$$

Thus, $x = \frac{1}{2}$ is the solution of the given equation.

Check :

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

$$\text{L.H.S.} = \frac{7\left(\frac{1}{2}\right) - 2}{5\left(\frac{1}{2}\right) - 1} = \frac{7-4}{5-2} = \frac{3}{3} = 1$$

$$\text{R.H.S.} = \frac{7\left(\frac{1}{2}\right) + 3}{5\left(\frac{1}{2}\right) + 4} = \frac{7+6}{5+8} = \frac{13}{13} = 1$$

$$\therefore \text{L.H.S.} = \text{R.H.S. for } x = \frac{1}{2}$$

Linear Equations in One Variable Ex 9.3 Q14

Answer :

$$\left(\frac{x+1}{x+2} \right)^2 = \frac{x+2}{x+4}$$

$$\text{or } \frac{x^2+2x+1}{x^2+4x+4} = \frac{x+2}{x+4}$$

$$\text{or } x^3 + 2x^2 + x + 4x^2 + 8x + 4 = x^3 + 4x^2 + 4x + 2x^2 + 8x + 8$$

$$\left[\text{After cross multiplication} \right]$$

$$\text{or } x^3 - x^3 + 6x^2 - 6x^2 + 9x - 12x = 8 - 4$$

$$\text{or } -3x = 4$$

$$\text{or } x = \frac{4}{-3} = \frac{-4}{3}$$

Thus, $x = \frac{-4}{3}$ is the solution of the given equation.

Check :

Substituting $x = \frac{-4}{3}$ in the given equation, we get :

$$\text{L.H.S.} = \left(\frac{\frac{-4}{3} + 1}{\frac{-4}{3} + 2} \right)^2 = \left(\frac{-4+3}{-4+6} \right)^2 = \frac{1}{4}$$

$$\text{R.H.S.} = \frac{\frac{-4}{3} + 2}{\frac{-4}{3} + 4} = \frac{-4+6}{-4+12} = \frac{2}{8} = \frac{1}{4}$$

$$\therefore \text{L.H.S.} = \text{R.H.S. for } x = \frac{-4}{3}$$

Linear Equations in One Variable Ex 9.3 Q15

Answer :

$$\left(\frac{x+1}{x-4}\right)^2 = \frac{x+8}{x-2}$$

$$\text{or } \frac{x^2+2x+1}{x^2-8x+16} = \frac{x+8}{x-2} \quad \left[\left(a+b\right)^2 = a^2 + b^2 + 2ab \text{ and } \left(a-b\right)^2 = a^2 + b^2 - 2ab \right]$$

$$\text{or } x^3 + 2x^2 + x - 2x^2 - 4x - 2 = x^3 - 8x^2 + 16x + 8x^2 - 64x + 128$$

$$\left[\text{After cross multiplication} \right]$$

$$\text{or } x^3 - x^3 - 3x + 48x = 128 + 2$$

$$\text{or } 45x = 130$$

$$\text{or } x = \frac{130}{45} = \frac{26}{9}$$

Thus $x = \frac{26}{9}$ is the solution of the given equation.

Check :

Substituting $x = \frac{26}{9}$ in the given equation, we get :

$$\text{L. H. S.} = \left(\frac{\frac{26}{9}+1}{\frac{26}{9}-4}\right)^2 = \left(\frac{26+9}{26-36}\right)^2 = \frac{1225}{100} = \frac{49}{4}$$

$$\text{R. H. S.} = \left(\frac{\frac{26}{9}+8}{\frac{26}{9}-2}\right) = \left(\frac{26+72}{26-18}\right) = \frac{98}{8} = \frac{49}{4}$$

$$\therefore \text{L. H. S.} = \text{R. H. S. for } x = \frac{26}{9}$$

*****END*****