



Linear Equations in One Variable Ex 9.3 Q16

Answer :

$$\frac{9x-7}{3x+5} = \frac{3x-4}{x+6}$$

$$\text{or } 9x^2 - 7x + 54x - 42 = 9x^2 - 12x + 15x - 20 \quad \left[\text{After cross multiplication} \right]$$

$$\text{or } 9x^2 - 9x^2 + 47x - 3x = -20 + 42$$

$$\text{or } 44x = 22$$

$$\text{or } x = \frac{22}{44}$$

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

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

Check :

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

$$\text{L.H.S.} = \frac{9\left(\frac{1}{2}\right) - 7}{3\left(\frac{1}{2}\right) + 5} = \frac{9 - 14}{3 + 10} = \frac{-5}{13}$$

$$\text{R.H.S.} = \frac{3\left(\frac{1}{2}\right) - 4}{\frac{1}{2} + 6} = \frac{3 - 8}{1 + 12} = \frac{-5}{13}$$

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

Linear Equations in One Variable Ex 9.3 Q17

Answer :

$$\frac{x+2}{x+5} = \frac{x}{x+6}$$

$$\text{or } x^2 + 2x + 6x + 12 = x^2 + 5x \quad \left[\text{After cross multiplication} \right]$$

$$\text{or } x^2 - x^2 + 8x - 5x = -12$$

$$\text{or } 3x = -12$$

$$\text{or } x = \frac{-12}{3}$$

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

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

Check :

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

$$\text{L.H.S.} = \frac{-4+2}{-4+5} = -2$$

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

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

Linear Equations in One Variable Ex 9.3 Q18

Answer :

$$\frac{2x-(7-5x)}{9x-(3+4x)} = \frac{7}{6}$$

$$\text{or } \frac{7x-7}{5x-3} = \frac{7}{6}$$

$$\text{or } 42x - 42 = 35x - 21 \quad \left[\text{After cross multiplication} \right]$$

$$\text{or } 42x - 35x = -21 + 42$$

$$\text{or } 7x = 21$$

$$\text{or } x = \frac{21}{7}$$

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

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

Check :

Substituting $x = 3$ in the given equation, we get :

$$\text{L.H.S.} = \frac{2 \times 3 - (7 - 5 \times 3)}{9 \times 3 - (3 + 4 \times 3)} = \frac{6 - (7 - 15)}{27 - (3 + 12)} = \frac{6 + 8}{27 - 15} = \frac{14}{12} = \frac{7}{6}$$

$$\text{R.H.S.} = \frac{7}{6}$$

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

Linear Equations in One Variable Ex 9.3 Q19

Answer :

$$\frac{15(2-x)-5(x+6)}{1-3x} = 10$$

$$\text{or } \frac{30-15x-5x-30}{1-3x} = 10$$

$$\text{or } \frac{-20x}{1-3x} = 10$$

$$\text{or } 10 - 30x = -20x \quad \left[\text{After cross multiplication} \right]$$

$$\text{or } -20x + 30x = 10$$

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

$$\text{or } x = 1$$

Thus, $x = 1$ is the solution of the given equation.

Check :

Substituting $x = 1$ in the given equation, we get :

$$\text{L.H.S.} = \frac{15(2-1)-5(1+6)}{1-3(1)} = \frac{15-35}{-2} = \frac{-20}{-2} = 10$$

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

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

Linear Equations in One Variable Ex 9.3 Q20

Answer :

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

$$\text{or } \frac{x+3}{x-3} = 2 - \frac{x+2}{x-2}$$

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

$$\text{or } \frac{x+3}{x-3} = \frac{x-6}{x-2}$$

$$\text{or } x^2 - 2x + 3x - 6 = x^2 - 3x - 6x + 18 \quad \left[\text{After cross multiplication} \right]$$

$$\text{or } x^2 - x^2 + x + 9x = 18 + 6$$

$$\text{or } 10x = 24$$

$$\text{or } x = \frac{24}{10}$$

$$\text{or } x = \frac{12}{5}$$

Thus, $x = \frac{12}{5}$ is the solution of the given equation.

Check :

Substituting $x = \frac{12}{5}$ in the given equation, we get :

$$\text{L.H.S.} = \frac{\frac{12}{5}+3}{\frac{12}{5}-3} + \frac{\frac{12}{5}+2}{\frac{12}{5}-2} = \frac{12+15}{12-15} + \frac{12+10}{12-10} = \frac{27}{-3} + \frac{22}{2} = \frac{54-66}{-6} = \frac{-12}{-6} = 2$$

$$\text{R.H.S.} = 2$$

$$\therefore \text{L.H.S.} = \text{R.H.S. for } x = \frac{12}{5}$$

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