



Linear equations in one variable Ex 8.3 Q1

Answer :

We have

$$\Rightarrow 6x + 5 = 2x + 17$$

Transposing $2x$ to LHS and 5 to RHS, we get

$$\Rightarrow 6x - 2x = 17 - 5$$

$$\Rightarrow 4x = 12$$

Dividing both sides by 4 , we get

$$\Rightarrow \frac{4x}{4} = \frac{12}{4}$$

$$\Rightarrow x = 3$$

Verification:

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

$$6 \times 3 + 5 = 2 \times 3 + 17$$

$$18 + 5 = 6 + 17$$

$$23 = 23$$

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

Hence, verified.

Linear equations in one variable Ex 8.3 Q2

Answer :

We have

$$\Rightarrow 2(5x - 3) - 3(2x - 1) = 9$$

Expanding the brackets, we get

$$\Rightarrow 2 \times 5x - 2 \times 3 - 3 \times 2x + 3 \times 1 = 9$$

$$\Rightarrow 10x - 6 - 6x + 3 = 9$$

$$\Rightarrow 10x - 6x - 6 + 3 = 9$$

$$\Rightarrow 4x - 3 = 9$$

Adding 3 to both sides, we get

$$\Rightarrow 4x - 3 + 3 = 9 + 3$$

$$\Rightarrow 4x = 12$$

Dividing both sides by 4, we get

$$\Rightarrow \frac{4x}{4} = \frac{12}{4}$$

$$\Rightarrow \text{Thus, } x = 3.$$

Verification:

Substituting $x = 3$ in LHS, we get

$$= 2(5 \times 3 - 3) - 3(2 \times 3 - 1)$$

$$= 2 \times 12 - 3 \times 5$$

$$= 24 - 15$$

$$= 9$$

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

Hence, verified.

Answer :

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

Transposing $\frac{x}{3}$ to LHS, we get

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

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

$$\Rightarrow \frac{x}{6} = 1$$

Multiplying both sides by 6, we get

$$\Rightarrow \frac{x}{6} \times 6 = 1 \times 6$$

$$\Rightarrow x = 6$$

Verification:

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

$$\frac{6}{2} = \frac{6}{3} + 1$$

$$3 = 2 + 1$$

$$3 = 3$$

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

Hence, verified.

Answer :

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

Transposing $\frac{2x}{5}$ to LHS and $\frac{3}{2}$ to RHS, we get

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

$$\Rightarrow \frac{5x-4x}{10} = \frac{-2-3}{2}$$

$$\Rightarrow \frac{x}{10} = \frac{-5}{2}$$

Multiplying both sides by 10, we get

$$\Rightarrow \frac{x}{10} \times 10 = \frac{-5}{2} \times 10$$

$$\Rightarrow x = -25$$

Verification:

Substituting $x = -25$ in the given equation, we get

$$\frac{-25}{2} + \frac{3}{2} = \frac{2 \times (-25)}{5} - 1$$

$$\frac{-22}{2} = -10 - 1$$

$$-11 = -11$$

LHS = RHS

Hence, verified.

Linear equations in one variable Ex 8.3 Q5

Answer :

$$\frac{3}{4}(x - 1) = x - 3$$

On expanding the brackets on both sides, we get

$$\Rightarrow \frac{3}{4}x - \frac{3}{4} = x - 3$$

Transposing $\frac{3}{4}x$ to RHS and 3 to LHS, we get

$$\Rightarrow 3 - \frac{3}{4} = x - \frac{3}{4}x$$

$$\Rightarrow \frac{12-3}{4} = \frac{4x-3x}{4}$$

$$\Rightarrow \frac{9}{4} = \frac{x}{4}$$

Multiplying both sides by 4, we get

$$\Rightarrow x = 9$$

Verification:

Substituting $x = 9$ on both sides, we get

$$\frac{3}{4}(9 - 1) = 9 - 3$$

$$\frac{3}{4} \times 8 = 6$$

$$6 = 6$$

LHS = RHS

Hence, verified.

Answer :

$$6. 3(x - 3) = 5(2x + 1)$$

On expanding the brackets on both sides, we get

$$\Rightarrow 3 \times x - 3 \times 3 = 5 \times 2x + 5 \times 1$$

$$\Rightarrow 3x - 9 = 10x + 5$$

Transposing $10x$ to LHS and 9 to RHS, we get

$$\Rightarrow 3x - 10x = 9 + 5$$

$$\Rightarrow -7x = 14$$

Dividing both sides by 7 , we get

$$\Rightarrow \frac{-7x}{7} = \frac{14}{7}$$

$$\Rightarrow x = -2$$

Verification:

Substituting $x = -2$ on both sides, we get

$$3(-2 - 3) = 5(2(-2) + 1)$$

$$3(-5) = 5(-3)$$

$$-15 = -15$$

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

Hence, verified.

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