Exercise 7A

$$= \frac{\frac{13}{2}+7}{3}$$

$$= \frac{1\times13+2\times7}{2}$$

$$= \frac{13+14}{6}$$

$$= \frac{27}{6}$$

$$= \frac{9}{2}$$

$$\text{RHS} = 1+\frac{3\times\frac{13}{2}-2}{5}$$

$$= 1+\frac{\frac{39-2\times2}{2}}{5}$$

$$= 1+\frac{35}{10}$$

$$= \frac{45}{10}$$

$$= \frac{9}{2}$$

$\therefore$ LHS=RHS

Hence, $y=\frac{13}{2}$ is a solution of the given equation.

Q22

Answer :

We have:

$$\Rightarrow \frac{2}{7}\left(x-9\right)+\frac{x}{3}=3$$

$$\Rightarrow \frac{2\times3(x-9)+7x}{21}=3$$

$$\Rightarrow 6(x-9)+7x=3\times21$$

$$\Rightarrow 6x-54+7x=63$$

$\Rightarrow 13x = 63 + 54$
$\Rightarrow 13x = 117$
$\Rightarrow x = 9$

CHECK: Substituting $x=9$ in the given equation we get.

$\text{LHS}=\frac{2}{7}\left(x-9\right)+\frac{x}{3}$
$=\frac{2}{7}\left(9-9\right)+\frac{x}{3}$
$=0+\frac{9}{3}$
$=\frac{9}{3}$
$=3$
RHS$=3$
$\therefore$ **LHS = RHS**
Hence, $x=9$ is a solution of the given equation.

Q23

Answer :

We have:
$\Rightarrow \frac{2x-3}{5}+\frac{x+3}{4}=\frac{4x+1}{7}$
$\Rightarrow \frac{4(2x-3)+5(x+3)}{20}=\frac{4x+1}{7}$
$\Rightarrow \frac{8x-12+5x+15}{20}=\frac{4x+1}{7}$
$\Rightarrow \frac{13x+3}{20}=\frac{4x+1}{7}$
$\Rightarrow 7(13x+3)=20(4x+1)$
$\Rightarrow 91x+21=80x+20$
$\Rightarrow 91x-80x=20-21$
$\Rightarrow 11x=-1$

$\Rightarrow x = \frac{-1}{11}$

CHECK: Substituting $x = -\frac{1}{11}$ in the given equation, we get:

LHS:

$$\text{LHS} = \frac{2x-3}{5} + \frac{x+3}{4}$$

$$= \frac{2\times\frac{1}{11}-3}{5} + \frac{-\frac{1}{11}+3}{4}$$

$$= \frac{-2-33}{55} + \frac{33-1}{44}$$

$$= -\frac{35}{55} + \frac{32}{44}$$

$$= \frac{-140+160}{220}$$

$$= \frac{20}{220} = \frac{1}{11}$$

$$\text{RHS} = \frac{4x+1}{7}$$

$$= \frac{4\times\left(-\frac{1}{11}\right)+1}{7}$$

$$= \frac{-4+11}{7\times11}$$

$$= \frac{7}{77}$$

$$= \frac{1}{11}$$

$\therefore$ LHS = RHS

Hence, $x = \frac{-1}{11}$ is a solution of the given equation.

Q24

Answer :

We have:

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

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

$$\Rightarrow \frac{3\times7}{4}x - \frac{3}{4} - 2x + \frac{1}{2} - \frac{x}{2} - x = \frac{3}{2}$$

$\Rightarrow \frac{21}{4}x - 2x - \frac{x}{2} - x = \frac{3}{2} + \frac{3}{4} - \frac{1}{2}$ $\left(\text{By transposition}\right)$

$\Rightarrow \frac{21x - 8x - 2\times x - 4x}{4} = 1 + \frac{3}{4}$

$\Rightarrow \frac{21x - 14x}{4} = \frac{7}{4}$

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

$\Rightarrow x = 1$

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

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

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

$= \frac{3}{4}\times 6 - 2$

$= \frac{9}{2} - 2$

$= \frac{9-4}{2}$

$= \frac{5}{2}$

$\text{RHS} = x + \frac{3}{2}$

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

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

$= \frac{5}{2}$

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

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

Q25

Answer :

We have :

$\frac{x+2}{6} - \left(\frac{11-x}{3} - \frac{1}{4}\right) = \frac{3x-4}{12}$

$\Rightarrow \frac{x+2}{6} - \left(\frac{11-x}{3}\right) + \frac{1}{4} = \frac{3x-4}{12}$

$\Rightarrow \frac{x+2}{6} - \left(\frac{11-x}{3}\right) - \frac{3x-4}{12} = -\frac{1}{4}$ (By transposition)

$\Rightarrow \frac{2(x+2)-4(11-x)-1(3x-4)}{12} = -\frac{1}{4}$

$\Rightarrow \frac{2x+4-44+4x-3x+4}{12} = -\frac{1}{4}$

$\Rightarrow 3x - 36 = -\frac{1}{4} \times 12$

$\Rightarrow 3x = -3 + 36$

$\Rightarrow x = \frac{33}{3}$

$\Rightarrow x = 11$

CHECK: Substituting $x = 11$ in the given equation, we get:

$\text{LHS} = \frac{x+2}{6} - \left(\frac{11-x}{3} - \frac{1}{4}\right)$

$= \frac{11+2}{6} - \left(\frac{11-11}{3} - \frac{1}{4}\right)$

$= \frac{13}{6} - \left(-\frac{1}{4}\right)$

$= \frac{13}{6} + \frac{1}{4}$

$= \frac{13 \times 2 + 3}{12}$

$= \frac{29}{12}$

$\text{RHS} = \frac{3x-4}{12}$

$= \frac{3 \times 11 - 4}{12}$

$= \frac{33-4}{12}$

$= \frac{29}{2}$

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

Hence, $x = 11$ is a solution of the given equation.

Verified.

Q26

Answer :

We have:

$\frac{9x+7}{2} - \left(x - \frac{x-2}{7}\right) = 36$

$\Rightarrow \frac{9x+7}{2} - x + \frac{x-2}{7} = 36$

$\Rightarrow \frac{7(9x+7) - 14 \times x + 2 \times (x-2)}{14} = 36$

$\Rightarrow \frac{63x+49-14x+2x-4}{14} = 36$

$\Rightarrow 51x + 45 = 36 \times 14$

$\Rightarrow 51x = 504 - 45$

$\Rightarrow x = \frac{459}{51}$

$\Rightarrow x = 9$

$\Rightarrow x = 9$

CHECK: Substituting $x = 9$ in the given equation, we get:

$\text{LHS} = \frac{9x+7}{2} - \left(x - \frac{x-2}{7}\right)$

$= \frac{9 \times 9 + 7}{2} - \left(9 - \frac{9-2}{7}\right)$

$= \frac{88}{2} - 9 + \frac{7}{7}$

$= 44 - 9 + 1$

$= 36$

$\text{RHS} = 36$

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

Hence, $x = 11$ is a solution of the given equation.

Verified.

Q27

Answer :

********** END **********