Linear Equations in One Variable Ex 9.3 Q21

Answer :

$$\frac{(x+2)(2x-3)-2x^2+6}{x-5}=2$$

or $\frac{2x^2+x-6-2x^2+6}{x-5}=2$

or $\frac{x}{x-5}=2$

or $2x-10=x$ [After cross multiplication]

or $2x-x=10$

or $x=10$

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

Check :

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

L.H.S. $=\frac{(10+2)(2\times10-3)-2\times10^2+6}{10-5}=\frac{12\times17-200+6}{5}=\frac{10}{5}=2$

R.H.S. $=2$

$\therefore$ L.H.S. $=$ R.H.S. for $x=10$.

Linear Equations in One Variable Ex 9.3 Q22

Answer :

$$\frac{x^2-(x+1)(x+2)}{5x+1}=6$$

or $\frac{x^2-x^2-2x-x-2}{5x+1}=6$

or $\frac{-3x-2}{5x+1}=6$

or $30x+6=-3x-2$ [After cross multiplication]

or $30x+3x=-2-6$

or $33x=-8$ or $x=\frac{-8}{33}$

Thus, $x=\frac{-8}{33}$ is the solution of the given equation.

Check :

Substituting $x=\frac{-8}{33}$ in the given equation, we get :

L.H.S. $=\frac{\left(\frac{-8}{33}\right)^2-\left(\frac{-8}{33}+1\right)\left(\frac{-8}{33}+2\right)}{5\left(\frac{-8}{33}\right)+1}=\frac{\frac{64}{1089}-\frac{25}{33}\times\frac{58}{33}}{\frac{-40}{33}+1}=\frac{\frac{64}{1089}-\frac{1450}{1089}}{\frac{-7}{33}}=\frac{\frac{-1386}{1089}}{\frac{-7}{33}}=\frac{42}{7}=$ R.H.S. $=6$

$\therefore$ L.H.S. $=$ R.H.S. for $x=\frac{-8}{33}$

Linear Equations in One Variable Ex 9.3 Q23

Answer :

$$\frac{(2x+3)-(5x-7)}{6x+11} = \frac{-8}{3}$$

or $\frac{-3x+10}{6x+11} = \frac{-8}{3}$

or $-9x + 30 = -48x - 88$ $\quad\left[\text{After cross multiplication}\right]$

or $-9x + 48x = -88 - 30$

or $39x = -118$ or $x = \frac{-118}{39}$

Thus, $x = \frac{-118}{39}$ is the solution of the given equation.

Check :

Substituting $x = \frac{-118}{39}$ in the given equation, we get :

$\text{L.H.S.} = \frac{-3\left(\frac{-118}{39}\right)+10}{6\left(\frac{-118}{39}\right)+11} = \frac{354+390}{-708+429} = \frac{744}{-279} = \frac{-8}{-3}$

$\text{R.H.S.} = \frac{-8}{3}$

$\therefore$ L.H.S. = R.H.S. for $x = \frac{-118}{39}$

Linear Equations in One Variable Ex 9.3 Q24

Answer :

(i) $\frac{x^2-9}{5+x^2} = \frac{-5}{9}$

or $9x^2 - 81 = -25 - 5x^2$ $\quad\left[\text{After cross multiplication}\right]$

or $9x^2 + 5x^2 = -25 + 81$

or $14x^2 = 56$

or $x^2 = \frac{56}{14}$

or $x^2 = 4 = 2^2$

or $x = 2$

Thus, $x = 2$ is the solution of the given equation.

Check :

Substituting $x = 2$ in the given equation, we get :

$\text{L.H.S.} = \frac{2^2-9}{5+2^2} = \frac{4-9}{5+4} = \frac{-5}{9}$

$\text{R.H.S.} = \frac{-5}{9}$

$\therefore$ L.H.S. = R.H.S. for $x = 2$.

(ii) $\frac{y^2+4}{3y^2+7} = \frac{1}{2}$

or $3y^2 + 7 = 2y^2 + 8$ $\quad\left[\text{After cross multiplication}\right]$

or $3y^2 - 2y^2 = 8 - 7$

or $y^2 = 1$

or $y = 1$

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

Check :

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

L.H.S. $= \dfrac{1^2 + 4}{3(1)^2 + 7} = \dfrac{5}{10} = \dfrac{1}{2}$

R.H.S. $= \dfrac{1}{2}$

$\therefore$ L.H.S. $=$ R.H.S. for $y = 1$.

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