Exercise 10A

Question 25:

$$3\sqrt{7}x^2 + 4x - \sqrt{7} = 0 \Rightarrow 3\sqrt{7}x^2 + 7x - 3x - \sqrt{7} = 0$$

$$\Rightarrow \sqrt{7}x\left(3x + \sqrt{7}\right) - 1\left(3x + \sqrt{7}\right) = 0$$

$$\Rightarrow \left(3x + \sqrt{7}\right)\left(\sqrt{7}x - 1\right) = 0$$

$$\Rightarrow \left(3x + \sqrt{7}\right) = 0 \text{ or } \left(\sqrt{7}x - 1\right) = 0$$

$$3x = -\sqrt{7} \text{ or } x = \frac{1}{\sqrt{7}}$$

$$x = \frac{-\sqrt{7}}{3} \text{ or } x = \frac{1 \times \sqrt{7}}{\sqrt{7} \times \sqrt{7}} = \frac{\sqrt{7}}{7}$$

Question 26:

$$\sqrt{7}y^2 - 6y - 13\sqrt{7} \Rightarrow \sqrt{7}y^2 - 13y + 7y - 13\sqrt{7} = 0$$

$$\Rightarrow y\left(\sqrt{7}y - 13\right) + \sqrt{7}\left(\sqrt{7}y - 13\right) = 0$$

$$\Rightarrow \left(y + \sqrt{7}\right)\left(\sqrt{7}y - 13\right) = 0$$

$$\Rightarrow \left(y + \sqrt{7}\right) = 0 \text{ or } \left(\sqrt{7}y - 13\right) = 0$$

$$y = -\sqrt{7} \text{ or } y = \frac{13}{\sqrt{7}} = \frac{13 \times \sqrt{7}}{\sqrt{7} \times \sqrt{7}} =$$

$$y = -\sqrt{7} \text{ or } y = \frac{13\sqrt{7}}{7}$$

Question 27:

$$4\sqrt{6}x^2 - 13x - 2\sqrt{6} = 0$$

$$\Rightarrow 4\sqrt{6}x^2 - 16x + 3x - 2\sqrt{6} = 0$$

$$\Rightarrow 4\sqrt{2}x\left(\sqrt{3}x - 2\sqrt{2}\right) + \sqrt{3}\left(\sqrt{3}x - 2\sqrt{2}\right) = 0$$

$$\Rightarrow \left(\sqrt{3}x - 2\sqrt{2}\right)\left(4\sqrt{2}x + \sqrt{3}\right) = 0$$

$$\Rightarrow x = \left(\frac{2\sqrt{2}}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}}\right) = \frac{2\sqrt{6}}{3} \text{ or } x = \left(\frac{-\sqrt{3}}{4\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}}\right) = \frac{-\sqrt{6}}{8}$$

Question 28:

$$5x - \frac{35}{x} = 18$$

$$\Rightarrow 5x^2 - 35 = 18x$$

$$\Rightarrow 5x^2 - 18x - 35 = 0$$

$$\Rightarrow 5x^2 - 25x + 7x - 35 = 0$$

$$\Rightarrow 5x(x-5) + 7(x-5) = 0$$

$$\Rightarrow (x-5)(5x+7) = 0$$

$$\Rightarrow (x-5) = 0 \quad \text{or} \quad (5x+7) = 0$$

$$\Rightarrow \qquad x = 5 \ \text{or} \ x = \frac{-7}{5}$$

Hence, 5 and x=-7/5 are the roots of given equation

Question 29:

$$10x - \frac{1}{x} = 3 \Rightarrow 10x^2 - 1 = 3x$$

$$\Rightarrow 10x^2 - 3x - 1 = 0$$

$$\Rightarrow 10x^2 - 5x + 2x - 1 = 0$$

$$\Rightarrow 5x(2x-1) + 1(2x-1) = 0$$

$$\Rightarrow (5x+1)(2x-1) = 0$$

$$\Rightarrow 5x + 1 = 0 \quad \text{or} \quad 2x - 1 = 0$$

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

Hence, x=-1/5 and x=1/2 are the roots of given equation.

Question 30:

$$\frac{2}{x^2}-\frac{5}{x}+2=0$$

Multiplying by x^2

$$2-5x+2x^2=0 \text{ or } 2x^2-5x+2=0$$

$$\Rightarrow 2x^2-4x-x+2=0$$

$$\text{or } 2x(x-2)-1(x-2)=0$$

$$(x-2)(2x-1)=0$$

$$\therefore (x-2)=0 \text{ or } 2x-1=0$$

$$\Rightarrow x=2, x=\frac{1}{2}$$

Hence, 2 and x=1/2 are the roots of given equation.

Question 31:

$$abx^2+\left(b^2-ac\right)x-bc=0$$

$$\Rightarrow abx^2+b^2x-acx-bc=0$$

$$\Rightarrow bx(ax+b)-c(ax+b)=0$$

$$\Rightarrow (ax+b)(bx-c)=0$$

$$(ax+b)=0 \text{ or } (bx-c)=0$$

$$x=\frac{-b}{a} \text{ or } x=\frac{c}{b}$$

Hence, x=-b/a and x=c/b are the roots of given equation.

Question 32:

$$a^2b^2x^2+b^2x-a^2x-1=0$$

$$\Rightarrow b^2x\left(a^2x+1\right)-1\left(a^2x+1\right)=0$$

$$\Rightarrow \left(a^2x+1\right)\left(b^2x-1\right)=0$$

$$\Rightarrow \left(a^2x+1\right)=0 \text{ or } \left(b^2x-1\right)=0$$

$$x=\frac{-1}{a^2} \text{ or } x=\frac{1}{b^2}$$

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