Exercise 10A

Question 9:

$$x^2 = 18x - 77 \Rightarrow x^2 - 18x + 77 = 0$$

$$\Rightarrow x^2 - 11x - 7x + 77x = 0$$

$$\Rightarrow x(x-11) - 7(x-11) = 0$$

$$(x-11)(x-7) = 0$$

$$x - 11 = 0 \text{ or } x - 7 = 0$$

$$x = 11 \text{ or } x = 7$$

Hence, 11 and 7 are the roots of equation $x^2 = 18x - 77$

Question 10:

$$9x^2 + 6x + 1 = 0 \Rightarrow (3x+1)^2 = 0$$

$$\Rightarrow 3x + 1 = 0 \Rightarrow x = \frac{-1}{3}$$

Hence, x=-1/3 is the repeated root of the equation $9x^2 + 6x + 1 = 0$

Question 11:

$$4x^2 - 12x + 9 = 0 \Rightarrow (2x-3)^2 = 0$$

$$\Rightarrow 2x - 3 = 0$$

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

Hence, x=3/2 is the repeated root of the equation

Question 12:

$$6x^2 + 11x + 3 = 0 \Rightarrow 6x^2 + 9x + 2x + 3 = 0$$

$$\Rightarrow 3x(2x+3) + 1(2x+3) = 0$$

$$\Rightarrow (2x+3) \times (3x+1) = 0$$

$$\Rightarrow (2x+3) = 0 \text{ or } (3x+1) = 0$$

$$x = \frac{-3}{2} \text{ or } x = \frac{-1}{3}$$

Hence, x=-3/2, x=-1/3 are the roots of $6x^2+11x+3=0$

Question 13:

$$6x^2 + x - 12 \Rightarrow 6x^2 + 9x - 8x - 12 = 0$$
$$\Rightarrow 3x(2x + 3) - 4(2x + 3) = 0$$
$$\Rightarrow (3x - 4)(2x + 3) = 0$$
$$\Rightarrow 3x - 4 = 0 \text{ or } 2x + 3 = 0$$
$$x = \frac{4}{3} \text{ or } x = \frac{-3}{2}$$

Hence, x=4/3, x=-3/2 are the roots of equation $6x^2+x-12=0$

Question 14:

$$3x^2 - 2x - 1 = 0 \Rightarrow 3x^2 - 3x + 1x - 1 = 0$$
$$\Rightarrow 3x(x - 1) + 1(x - 1) = 0$$
$$\Rightarrow (3x + 1)(x - 1) = 0$$
$$\Rightarrow 3x + 1 = 0 \text{ or } x - 1 = 0$$
$$x = \frac{-1}{3} \text{ or } x = 1$$

Hence, x=-1/3 and 1 are the roots of the equation $3x^2-2x-1=0$.

Question 15:

$$6x^2 - x - 2 = 0 \Rightarrow 6x^2 - 4x + 3x - 2 = 0$$
$$\Rightarrow 2x(3x - 2) + 1(3x - 2) = 0$$
$$\Rightarrow (3x - 2)(2x + 1) = 0$$
$$\Rightarrow (3x - 2) = 0 \text{ or } (2x + 1) = 0$$
$$x = \frac{2}{3} \text{ or } x = \frac{-1}{2}$$

Hence, x=2/3, x=-1/2 are the roots of equation $6x^2-x-2=0$.

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