

Ncert Solutions Class 10 Quadratic Equations

Exercise 4.2

1. Find the roots of the following quadratic equations by factorisation:

(i) $x^2 - 3x - 10 = 0$

(ii) $2x^2 + x - 6 = 0$

(iii) $\sqrt{2}x^2 + 7x + 5\sqrt{2} = 0$

(iv) $2x^2 - x + \frac{1}{8} = 0$

(v) $100x^2 - 20x + 1 = 0$

(i) Solution:

Given is: $x^2 - 3x - 10 = 0$

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

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

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

$$\Rightarrow \text{either } (x - 5) = 0 \text{ or } (x + 2) = 0$$

$$\therefore x = 5, -2$$

Therefore, roots of given equation are 5 and -2.

(ii)

Given is: $2x^2 + x - 6 = 0$

$$\Rightarrow 2x^2 + 4x - 3x - 6 = 0$$

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

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

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

$$\therefore x = -2, \frac{3}{2}$$

Therefore, roots of given equation are -2 and $\frac{3}{2}$.

(iii)

Given is: $\sqrt{2}x^2 + 7x + 5\sqrt{2} = 0$

$$\Rightarrow \sqrt{2}x^2 + 2x + 5x + 5\sqrt{2} = 0$$

$$\Rightarrow \sqrt{2}x(x + \sqrt{2}) + 5(x + \sqrt{2}) = 0$$

$$\Rightarrow (x + \sqrt{2})(2x + 5) = 0$$

$$\Rightarrow \text{either } (x + \sqrt{2}) = 0 \text{ or } (2x + 5) = 0$$

$$\therefore x = -\sqrt{2}, -\frac{5}{2}$$

Therefore, roots of given equation are $-\sqrt{2}$ and $-\frac{5}{2}$.

(iv)

Given is: $2x^2 - x + \frac{1}{8} = 0$

$$\Rightarrow 16x^2 - 8x + 1 = 0$$

$$\Rightarrow 16x^2 - 4x - 4x + 1 = 0$$

$$\Rightarrow 4x(4x - 1) - 1(4x - 1) = 0$$

$$\Rightarrow (4x - 1)(4x - 1) = 0$$

$$\Rightarrow \text{either } (4x - 1) = 0 \text{ or } (4x - 1) = 0$$

$$\therefore x = \frac{1}{4}, \frac{1}{4}$$

Therefore, roots of given equation are $\frac{1}{4}$ and $\frac{1}{4}$.

(v)

Given is: $100x^2 - 20x + 1 = 0$

$$\Rightarrow 100x^2 - 10x - 10x + 1 = 0$$

$$\Rightarrow 10x(10x - 1) - 1(10x - 1) = 0$$

$$\Rightarrow (10x - 1)(10x - 1) = 0$$

$$\Rightarrow \text{either } (10x - 1) = 0 \text{ or } (10x - 1) = 0$$

$$\therefore x = \frac{1}{10}, \frac{1}{10}$$

Therefore, roots of given equation are $\frac{1}{10}$ and $\frac{1}{10}$.

