Ncert Solutions Chapter 4 Quadratic Equations Exercise 4.2 Question 1

Question 1. Find the roots of the following Quadratic Equations by factorization.

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

Solution (i)

$$x^2 - 3x - 10 = 0$$
$$\Rightarrow x^2 - 5x + 2x - 10 = 0$$
$$\Rightarrow x(x-5) + 2(x-5) = 0$$
$$\Rightarrow (x-5)(x+2) = 0$$
$$\Rightarrow x = 5, -2$$

Solution (ii)

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

Solution (iii)

$$\sqrt{2}x^2+7x+5\sqrt{2}=0$$
$$\Rightarrow \sqrt{2}x^2+5x+2x+5\sqrt{2}=0$$
$$\Rightarrow x\left(\sqrt{2}x+5\right)+\sqrt{2}\left(\sqrt{2}x+5\right)=0$$
$$\Rightarrow \left(\sqrt{2}x+5\right)\left(x+\sqrt{2}\right)=0$$
$$\Rightarrow x=\frac{-5}{\sqrt{2}},-\sqrt{2}$$

Solution (iv)

$$2x^2-x+\frac{1}{8}=0$$
$$\Rightarrow \frac{16x^2-8x+1}{8}=0$$
$$\Rightarrow 16x^2-8x+1=0$$
$$\Rightarrow 16x^2-4x-4x+1=0$$
$$\Rightarrow 4x(4x-1)-1(4x-1)=0$$
$$\Rightarrow (4x-1)(4x-1)=0$$
$$\Rightarrow x=\frac{1}{4},\frac{1}{4}$$

Solution (v)

$$100x^2-20x+1=0$$
$$\Rightarrow 100x^2-10x-10x+1=0$$
$$\Rightarrow 10x(10x-1)-1(10x-1)=0$$
$$\Rightarrow (10x-1)(10x-1)=0$$
$$\Rightarrow x=\frac{1}{10},\frac{1}{10}$$

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