



EDUCATION SOURCE

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QUADRATIC EQUATIONS

Solution of a Quadratic
Equation by Factorisation
chapter: 4, Exercise: 4.2
Part- 1

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Find the roots of the equation $2x^2 - 5x + 3 = 0$, by factorization.

$$\underline{2x^2} - \underline{5x} + \underline{3} = 0$$

$$ax^2 + bx + c = 0$$

$$\underline{2x^2} - \underline{3x} - \underline{2x} + \underline{3} = 0$$

$$x(\underline{2x-3}) - 1(\underline{2x-3}) = 0$$

$$\boxed{(2x-3)(x-1) = 0}$$

$$\underline{a} = 2, \underline{b} = -5, \underline{c} = 3$$

$$a \times c = 2 \times 3 = \underline{6}$$

$$\underline{1} \times \underline{6} = 6 \checkmark$$

$$\underline{\underline{3}} \times \underline{\underline{2}} = 6 \checkmark$$

$$1 - 6 = -5$$

$$1 \times -6 = \underline{\underline{-6}}$$

$$3 \times 2 = 6$$

$$-3 \times -2 = 6$$

$$\boxed{1 - 3 - 2 = -5}$$



Find the roots of the quadratic equation $3x^2 - 2\sqrt{6}x + 2 = 0$

$$\underline{3x^2 - 2\sqrt{6}x + 2 = 0}$$

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

$$3x^2 - \sqrt{3 \times 2}x - \sqrt{3 \times 2}x + 2 = 0$$

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

$$\underline{\sqrt{3}} \times \underline{\sqrt{3}} x^2 - \underline{\sqrt{3}} \underline{\sqrt{2}} x - \underline{\sqrt{3}} \underline{\sqrt{2}} x + \underline{\sqrt{2}} \underline{\sqrt{2}} = 0$$

$$\sqrt{3}x(\sqrt{3}x - \sqrt{2}) - \sqrt{2}(\sqrt{3}x - \sqrt{2}) = 0$$

$$\underline{(\sqrt{3}x - \sqrt{2})(\sqrt{3}x - \sqrt{2}) = 0}$$

$$\times 3 \times 2 = \underline{6} \checkmark, \underline{-2\sqrt{6}}$$

$$\underline{1 \times 6 = 6}$$

$$\underline{1 \times \sqrt{6} \sqrt{6} = 6}$$

$$\underline{-\sqrt{6} \times \sqrt{6} = 6}$$

$$\underline{-\sqrt{6} - \sqrt{6} = -2\sqrt{6}}$$



Find the roots of the quadratic equation $\sqrt{2}x^2 + 7x + 5\sqrt{2} = 0$

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

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

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

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

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

$$\sqrt{2} \times 5\sqrt{2}$$

$$\frac{5 \times 2 = 10}{5 + 2 = 7}$$

$$5 + 2 = 7$$



Find the roots of the quadratic equation $(2x^2 - x + \frac{1}{8} = 0)$

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

$$\frac{16x^2 - 8x + 1}{8} = 0$$

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

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

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

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

$$\underline{16} \checkmark$$

$$-16 \times 1 = 16$$

$$-8 \times 2 = 16$$

$$4 \times 4 = 16$$

$$-4 - 4 = \underline{-8}$$

$$-4x - 4 = 16$$

