

29/4/24.

WhatsApp Test - 7.



Q1). $2x^2 - 3x + 5 = 0$

Let the given quadratic equation $2x^2 - 3x + 5 = 0$ be of the general form $ax^2 + bx + c = 0$ where $a = 2$; $b = -3$; $c = 5$.

$$D = b^2 - 4ac$$

$$D = (-3)^2 - 4 \times 2 \times 5$$

$$D = 9 - 40$$

$$D = -31$$

$$-31 < 0$$

Thus the given quadratic equation has no real zeroes

$$\begin{array}{r} 40 \\ -9 \\ \hline 31 \end{array}$$

Q2). $3x^2 - 4\sqrt{3}x + 4 = 0$

Let the given quadratic equation $3x^2 - 4\sqrt{3}x + 4 = 0$ be of the general form $ax^2 + bx + c = 0$ where $a = 3$; $b = -4\sqrt{3}$; $c = 4$.

$$D = b^2 - 4ac$$

$$D = (-4\sqrt{3})^2 - 4 \times 3 \times 4$$

$$D = 48 - 48$$

$$D = 0$$

$0 = 0$, thus the given quadratic equation has real and equal roots.

$$\therefore x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \Rightarrow x = \frac{-b}{2a}, x = \frac{-b}{2a}$$

$$\Rightarrow x = \frac{4\sqrt{3}}{6} = \frac{2\sqrt{3}}{3}$$

$$\Rightarrow x = \frac{4\sqrt{3}}{6} = \frac{2\sqrt{3}}{3} \therefore x = \frac{2\sqrt{3}}{3}, \frac{2\sqrt{3}}{3}$$

Q3). $2x^2 - 6x + 3 = 0$

Let the given quadratic equation $2x^2 - 6x + 3 = 0$ be of the general form $ax^2 + bx + c = 0$ where $a = 2$; $b = -6$; $c = 3$.

$$D = b^2 - 4ac$$

$$D = (-6)^2 - 4 \times 2 \times 3$$

$$D = 36 - 24$$

$$D = 12$$

$12 > 0$. Thus the given quadratic equation has

real and distinct roots

$$\therefore x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{6 \pm \sqrt{12}}{4} = \frac{6 \pm 2\sqrt{3}}{4}$$

$$\Rightarrow x = \frac{3 \pm \sqrt{3}}{2} = \frac{2(3 \pm \sqrt{3})}{4}$$

$$\therefore x = \frac{3 + \sqrt{3}}{2} \text{ or } x = \frac{3 - \sqrt{3}}{2}$$

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