

Assignment 1

Muskan Jaiswal

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QUES 1: Solve the equation $4x^2 - 5x - 3 = 0$ and give your answer correct to 2 decimal places.

Answer-For any kind of equation of the form $ax^2 + bx + c = 0$

It's roots upto two decimals are

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

For the given equation-

$$4x^2 - 5x - 3 = 0 \quad (1)$$

$$\text{roots are } x1 = \frac{5 + \sqrt{(-5)^2 - 4 \cdot 4 \cdot (-3)}}{2 \cdot 4}$$

$$x1 = \frac{5 + \sqrt{25 + 48}}{8}$$

$$x1 = \frac{5 + \sqrt{73}}{8}$$

$$x1 = \frac{5 + 8.54}{8}$$

$$x1 = \frac{13.54}{8}$$

$$x1 = 1.69$$

and

$$x2 = \frac{5 - \sqrt{(-5)^2 - 4 \cdot 4 \cdot (-3)}}{2 \cdot 4}$$

$$x2 = \frac{5 - \sqrt{25 + 48}}{8}$$

$$x2 = \frac{5 - \sqrt{73}}{8}$$

$$x2 = \frac{5 - 8.54}{8}$$

$$x2 = \frac{-3.54}{8}$$

$$x2 = -0.44$$

The roots of the given equation are 1.69 and -0.44