CHAPTER-4 | Quadratic Equations

QUIZ-01

1. Which of the following is a quadratic equation?

   A. $(x + 2)(x - 3) = x^2 - 4$ B. $x + 3 = 2x - 5$

   C. $x^2 - 4x + 5 = 2x - 3$ D. $x^3 - x + 1 = 0$ (C)

   Explanation : Simplifying $x^2 - 4x + 5 = 2x - 3$ gives $x^2 - 6x + 8 = 0$, which is of the form $ax^2 + bx + c = 0$.

2. The standard form of a quadratic equation is :

   A. $ax + b = 0$ B. $ax^2 + bx + c = 0$

   C. $x^3 + bx + c = 0$ D. $ax^2 + bx = 0$ (B)

   Explanation : The standard form of a quadratic equation is $ax^2 + bx + c = 0$ where $a \neq 0$.

3. What is the discriminant of the equation $2x^2 - 4x + 3 = 0$?

   A. 16 B. −8

   C. 4 D. 0 (B)

   Explanation : Discriminant

   $D = b^2 - 4ac = (-4)^2 - 4 \times 2 \times 3 = 16 - 24 = -8$.

4. If the discriminant of a quadratic equation is less than zero, then :

   A. It has two distinct real roots

   B. It has no real roots

   C. It has two equal real roots

   D. It has one root (B)

   Explanation : If $b^2 - 4ac < 0$, the equation has no real roots.

5. The roots of the equation $2x^2 - 5x + 3 = 0$ are :

   A. $x = 1$ and $x = 3$ B. $x = 1$ and $x = 1.5$

   C. $x = 2$ and $x = 3$ D. $x = -1$ and $x = 2$

   (B)

   Explanation : By factorization :

   $(2x - 3)(x - 1) = 0 \rightarrow x = 3/2, 1$.

6. What are the zeroes of the quadratic polynomial $3x^2 - 12x + 12$?

   A. 2 and 2 B. 1 and 3

   C. 2 and 3 D. 3 and 4 (A)

   Explanation : Discriminant = 0 → Roots are equal.

   Using quadratic formula: x = 2.

7. A quadratic equation can have at most how many roots?

   A. One B. Two

   C. Three D. Infinite (B)

   Explanation : A quadratic equation can have at most 2 roots.

8. The roots of the equation $6x^2 - x - 2 = 0$ are :

   A. $x = 2/3$ and $x = -1/2$

   B. $x = 1$ and $x = -1$

   C. $x = -3$ and $x = 2$

   D. $x = 1$ and $x = -2$ (A)

   Explanation : Factorization gives

   $(3x - 2)(2x + 1) = 0 \rightarrow x = 2/3, -1/2$.

9. In the equation $ax^2 + bx + c = 0$, what is the condition for equal roots?

   A. $b^2 - 4ac > 0$ B. $b^2 - 4ac < 0$

   C. $b^2 - 4ac = 0$ D. $b^2 - 4ac = 1$ (C)

   Explanation : If $b^2 - 4ac = 0$, the roots are equal.

10. Who among the following gave the formula to solve $ax^2 + bx = c$?

    A. Euclid B. Sridharacharya

    C. Brahmagupta D. Al-Khwarizmi (C)

    Explanation : Brahmagupta gave the formula to solve $ax^2 + bx = c$.