

Quadratic Equations & Inequations

Date Planned : __ / __ / __	Daily Tutorial Sheet – 1	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	JEE Main (Archive)	Exact Duration: _____

1. Let α and β be the roots of equation $x^2 - 6x - 2 = 0$. If $a_n = \alpha^n - \beta^n$, for $n \geq 1$, then the value of $\frac{a_{10} - 2a_8}{2a_9}$ is: (2011)
 (A) 6 (B) -6 (C) 3 (D) -3

2. In the quadratic equation $p(x) = 0$ with real coefficients has purely imaginary roots. Then, the equation $p[p(x)] = 0$ has: (2014)
 (A) only purely imaginary roots (B) all real roots 
 (C) two real and two purely imaginary roots (D) neither real nor purely imaginary roots

3. The complete set of all real numbers x for which $x^2 - |x + 2| + x > 0$ is: (2002)
 (A) $(-\infty, -2) \cup (2, \infty)$ (B) $(-\infty, -\sqrt{2}) \cup (\sqrt{2}, \infty)$
 (C) $(-\infty, -1) \cup (1, \infty)$ (D) $(\sqrt{2}, \infty)$

4. The number of solutions of $\log_4(x - 1) = \log_2(x - 3)$ is: (2001)
 (A) 5 (B) 1 (C) 2 (D) 0

5. For the equations $3x^2 + px + 3 = 0$, $p > 0$, if one of the roots is square of the other, then p is equal to: (2002)
 (A) $1/3$ (B) 1 (C) 3 (D) $2/3$

6. The equation $\sqrt{x+1} - \sqrt{x-1} = \sqrt{4x-1}$ has: (1997)
 (A) No solution (B) One solution
 (C) Two solutions (D) More than two solutions

- *7. The equation $x^4 - \frac{3}{4}(\log_2 x)^2 + \log_2 x - \frac{5}{4} = \sqrt{2}$ has: (1989)
 (A) atleast one-real solution (B) exactly three-real solutions
 (C) exactly one irrational solution (D) complex roots

8. The equation $x - \frac{2}{x-1} = 1 - \frac{2}{x-1}$ has: (1994)
 (A) no root (B) one root (C) two equal roots (D) infinitely many roots

9. For real x , the function $\frac{(x-a)(x-b)}{(x-c)}$ will assume all real values provided: (1984)
 (A) $a > b > c$ (B) $a < b < c$ (C) $a > c < b$ (D) $a < c < b$

10. The number of real solutions of the equation $|x|^2 - 3|x| + 2 = 0$ is: (1982)
 (A) 4 (B) 1 (C) 3 (D) 2