Chapter 03 Quadratic Equation

Practice Section-01

Q.1 If the roots of the quadratic equation $6x^2 - 7x + k = 0$ are rational then k is equal to

(1) –1 (2) –1, –2 (3) –2 (4) 1, 2

Q.2 If α, β are roots of the quadratic equation $ax^2 + bx + c = 0$, then $(a\alpha + b)(a\beta + b)$ is equal to

(1) ab (2) bc (3) ca (4) a+c

Q.3 If α, β are roots of the quadratic equation $ax^2 - bx - c = 0$, then $\alpha^2 - \alpha\beta + \beta^2$ is equal to

(1) $\frac{b^2 + 3ac}{a^2}$ (2) $\frac{b^2 - 3ac}{a^2}$ (3) $\frac{b^2 + 2ac}{a^2}$ (4) $\frac{b^2 - 2ac}{a^2}$

Q.4 The quadratic equation with one root $\frac{1}{2}\left(1 + \sqrt{-3}\right)$ is

(1) $x^2 - x - 1 = 0$ (2) $x^2 + x - 1 = 0$ (3) $x^2 + x + 1 = 0$ (4) $x^2 - x + 1 = 0$

Q.5 The roots of the quadratic equation $ax^2 + bx + c = 0$ will be imaginary if

(1) $a > 0, b = 0, c < 0$ (2) $a > 0, b = 0, c > 0$ (3) $a = 0, b > 0, c > 0$ (4) $a > 0, b > 0, c = 0$

Q.6 For what value of "a" the difference of the roots of the equation $2x^2 - (a+1)x + (a-1) = 0$ is equal to their product?

(1) 0 (2) 1 (3) –1 (4) 2

Q.7 The number of roots of the quadratic equation $8\sec^2\theta - 6\sec\theta + 1 = 0$ is -

(1) Infinite (2) 1 (3) 2 (4) 0

Q.8 If the roots of $x^2 - 4x - \log_2 a = 0$ are real then -

(1) $a \geq \frac{1}{4}$ (2) $a \geq \frac{1}{8}$ (3) $a \geq \frac{1}{16}$ (4) none of these

Q.9 For what values of p, the roots of the quadratic equation $12(p + 2)x^2 - 12(2p - 1)x - 38p - 11 = 0$ are imaginary-

(1) $p = R^-$ (2) $p \in (-\infty, -1) \cup \left(-\frac{1}{2}, \infty\right)$

(3) $p \in \left(-1, -\frac{1}{2}\right)$ (4) p = – 1

Q.10 Ramesh and Mahesh solve a quadratic equation. Ramesh reads its constant term wrongly and finds its roots as 8 and 2 where as Mahesh reads the coefficient of x wrongly and finds its roots as 11 and –1. The correct roots of the equation are

(1) 11, 1 (2) –11, 1 (3) 11, –1 (4) None of these

Q.11 If α, β are roots of the equation $x^2 + px + q = 0$ then the equation whose roots are $\frac{q}{\alpha}, \frac{q}{\beta}$ will be

(1) $x^2 - qx + p = 0$ (2) $x^2 + px + q = 0$ (3) $x^2 - px - q = 0$ (4) $qx^2 + px + q = 0$

Q.12 If α and β are roots of $x^2 - 2x + 3 = 0$, then the equation whose roots are $\frac{\alpha - 1}{\alpha + 1}$ and $\frac{\beta - 1}{\beta + 1}$ will be -

(1) $3x^2 - 2x - 1 = 0$ (2) $3x^2 + 2x + 1 = 0$ (3) $3x^2 - 2x + 1 = 0$ (4) $x^2 - 3x + 1 = 0$

Practice Section-02

Q.1 If the roots of the equation $2x^2 - 3x + 5 = 0$ are reciprocals of the roots of the equation $ax^2 + bx + 2 = 0$, then

(1) $a = 2, b = 3$ (2) $a = 2, b = -3$ (3) $a = 5, b = -3$ (4) $a = 5, b = 3$

Q.2 If $x + k$ is a common factor of the expressions $x^2 + px + q$ and $x^2 + lx + m$, then k is equal to

(1) $\frac{p+q}{l+m}$ (2) $\frac{p-l}{q-m}$ (3) $\frac{q+m}{p+l}$ (4) $\frac{q-m}{p-l}$

Q.3 If both the roots of the equations $k(6x^2+3)+rx+2x^2-1=0$ and $6k(2x^2+1)+px+4x^2-2=0$ are common, then $2r-p$ is equal to

(1) 1 (2) -1 (3) 2 (4) 0

Q.4 If one of the roots of equation $x(x + 2) = 4 - (1 - ax^2)$ tends to ∞, then "a" will tend to -

(1) 0 (2) 1 (3) -1 (4) 2

Q.5 If x be real then the value of $\frac{x^2-2x+1}{x+1}$ will not lie between

(1) 0 and 8 (2) -8 and 8 (3) -8 and 0 (4) None of these

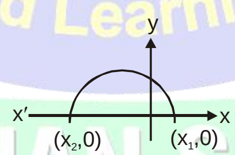
Q.6 If α & β are the real roots of the quadratic equation $ax^2 + bx + c = 0$, then $(1 + \alpha + \alpha^2)(1 + \beta + \beta^2) =$

(1) 0 (2) positive (3) negative (4) none of these

Q.7 If the equations $ax^2 + bx + c = 0$ and $x^3 + 3x^2 + 3x + 2 = 0$ have two common roots then

(1) $a = 2b = c$ (2) $a = b = c$ (3) $b^2 = 4ac$ (4) None

Q.8 The diagram shows the graph of $y = ax^2 + bx + c$. Then -



(1) $a > 0$ (2) $b^2 - 4ac < 0$ (3) $c > 0$ (4) none of these

Practice Section-03

Q.1 The equation $\left(a^2-a-2\right)x^2+\left(a^2-4\right)x+a^2-3a+2=0$ will have more than two solutions if "a" equals

(1) 2 (2) 1 (3) -2 (4) not possible

Q.2 Solve: $x^2 - 3x + 2 < 0$

(1) $(-\infty,1)$ (2) $(-\infty,0)$ (3) $(1,2)$ (4) $\left(\frac{3}{2},2\right)$

Q.3 If both the roots of the equation $x^2-(p-4)x+2e^{2\ln p}-4=0$ are negative, then p belongs to

(1) $\left(-\sqrt{2},4\right)$ (2) $\left(\sqrt{2},4\right)$ (3) $\left(-4,\sqrt{2}\right)$ (4) $\left(-\infty,-\sqrt{2}\right)$

Q.4 If x be real, then $3x^2+14x+11>0$ when

(1) $x<-\frac{3}{2}$ (2) $x>-\frac{3}{4}$ (3) $x>-2$ (4) None of these

Q.5 If $x^2 + 6x - 27 > 0$, $-x^2 + 3x + 4 > 0$, then x lies in the interval

(1) (3, 4) (2) [3, 4] (3) $(-\infty, 3] \cup [4, \infty)$ (4) $(-9, 4)$

Q.6 The set of values of K for which both the roots of the equation $4x^2 - 20Kx + (25K^2 + 15K - 66) = 0$, are less than 2, is given by

(1) $(2, \infty)$ (2) (4/5, 2) (3) $(-\infty, -1)$ (4) None of these

Q.7 What is the value of x which satisfy the inequality $\frac{x-2}{x+2}>\frac{2x-3}{4x-1}$

(1) $x > 4$ (2) $x > 3$ (3) $x > -2$ (4) None of these

Q.8 The set of values for which $x^3 + 1 \geq x^2 + x$, is

(1) $x \leq 0$ (2) $x \geq 0$ (3) $x \geq -1$ (4) $-1 \leq x \leq 1$

ANSWER KEY

PRACTICE SECTION-01

Que.	1	2	3	4	5	6	7	8	9	10	11	12
Ans:	4	3	1	4	2	4	4	3	3	3	2	3

PRACTICE SECTION-02

Que.	1	2	3	4	5	6	7	8
Ans:	3	4	4	2	3	2	2	3

PRACTICE SECTION-03

Que.	1	2	3	4	5	6	7	8
Ans:	1	3	2	2	1	3	1	3