

JEE MATHEMATICS

Topic: Quadratic Equation

- Q.1 The roots of quadratic equation $x^2 + 14x + 45 = 0$ are -
(A) -9, 5 (B) 5, 9
(C) -5, 9 (D) -5, -9
- Q.2 Roots of the equation
 $(a + b - c)x^2 - 2ax + (a - b + c) = 0$,
(a, b, c \in Q) are -
(A) rational (B) irrational
(C) complex (D) none of these
- Q.3 The difference between the roots of the equation $x^2 - 7x - 9 = 0$ is -
(A) 7 (B) $\sqrt{85}$
(C) 9 (D) $2\sqrt{85}$
- Q.4 If one root of $ax^2 + bx + c = 0$ be square of the other, then the value of $b^3 + ac^2 + a^2c$ is-
(A) 3 abc (B) -3abc
(C) 0 (D) None of these
- Q.5 If α and β are roots of $2x^2 - 3x - 6 = 0$, then the equation whose roots are $\alpha^2 + 2$ and $\beta^2 + 2$ will be -
(A) $4x^2 + 49x - 118 = 0$
(B) $4x^2 - 49x - 118 = 0$
(C) $4x^2 - 49x + 118 = 0$
(D) $4x^2 + 49x + 118 = 0$

Q.6 If α and β are roots of $2x^2 - 7x + 6 = 0$, then the quadratic equation whose roots are $-\frac{2}{\alpha}, -\frac{2}{\beta}$ is-

(A) $3x^2 + 7x + 4 = 0$

(B) $3x^2 - 7x + 4 = 0$

(C) $6x^2 + 7x + 2 = 0$

(D) $6x^2 - 7x + 2 = 0$

Q.7 The roots of the equation $ax^2 + bx + c = 0$ will be imaginary if -

(A) $a > 0, b = 0, c < 0$

(B) $a > 0, b = 0, c > 0$

(C) $a = 0, b > 0, c > 0$

(D) $a > 0, b > 0, c = 0$

Q.8 If roots of the equation $lx^2 + mx - 2 = 0$ are reciprocal of each other, then-

(A) $l = 2$ (B) $l = -2$

(C) $m = 2$ (D) $m = -2$

Q.9 The equation $ax^2 + bx + a = 0$ & $x^3 - 2x^2 + 2x - 1 = 0$ have two root in common, then $(a + b)$ is equal to -

(A) 1 (B) 0 (C) -1 (D) 2

Q.10 For all real values of x , the maximum value of the expression $\frac{x}{x^2 - 5x + 9}$ is-

(A) 1 (B) 45

(C) 90 (D) None of these

Q.11 If x be real then the minimum value of

$40 - 12x + x^2$ is -

(A) 28 (B) 4 (C) -4 (D) 0

Q.12 If for real values of x , $x^2 - 3x + 2 > 0$ and $x^2 - 3x - 4 \leq 0$, then-

(A) $-1 \leq x < 1$

(B) $-1 \leq x < 4$

(C) $-1 \leq x < 1$ and $2 < x \leq 4$

(D) $2 < x \leq 4$

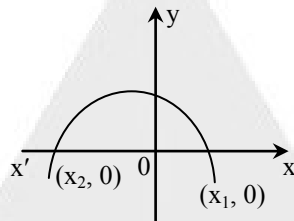
Q.13 If $x^2 + 2xy + 2x + my - 3$ have two rational factors then m is equal to -

(A) 6, 2 (B) -6, 2

(C) 6, -2 (D) -6, -2

Q.14 The diagram shows the graph of

$y = ax^2 + bx + c$. Then-



(A) $a > 0$ (B) $b^2 - 4ac < 0$

(C) $c > 0$ (D) $b^2 - 4ac = 0$

Q.15 The maximum value of the function $y = \frac{1}{4x^2 + 2x + 1}$ is-

(A) $\frac{4}{3}$ (B) $\frac{5}{2}$

(C) $\frac{13}{4}$ (D) None of these

Q.16 For what values of p, the roots of the equation $12(p + 2)x^2 - 12(2p - 1)x - 38p - 11 = 0$ are imaginary-

(A) $p = \mathbb{R}^-$

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

(C) $p \in \left(-1, -\frac{1}{2}\right)$

(D) $p = -1$

Q.17 The equation whose roots are $\frac{q}{p+q}$, $\frac{-p}{p+q}$ is-

(A) $(p+q)^2 x^2 + (p^2 - q^2)x + pq = 0$

(B) $x^2 - \left(\frac{q-p}{q+p}\right)x - \frac{pq}{(q+p)^2} = 0$

(C) $(p+q)x^2 + (p^2 - q^2)x - pq = 0$

(D) None of these

Q.18 If one root of the equations $ax^2 + bx + c = 0$ and $x^2 + x + 1 = 0$ is common, then-

(A) $a + b + c = 0$

(B) $a = b = c$

(C) $a = b$ or $b = c$ or $c = a$

(D) None of these

Q.19 If x is real, then the values of the expression $\frac{(x+m)^2 - 4mn}{2(x-n)}$ are not -

(A) greater than $(m+n)$

(B) greater than $(m+2n)$

(C) between $2m$ and $2n$

(D) between m and $m+n$

Q.20 If x is the real, then the value of the expression $\frac{2x^2 + 4x + 1}{x^2 + 4x + 2}$ is -

(A) any number

(B) only positive number

(C) only negative number

(D) only 1

Q.21 If one root of the equations $ax^2 + bx + c = 0$ is equal to n^{th} power of the other root, then $(ac^n)^{1/(n+1)} + (a^n c)^{1/(n+1)}$ equals -

(A) $-b$ (B) b

(C) $(-b)^{1/(n+1)}$ (D) $(b)^{1/(n+1)}$

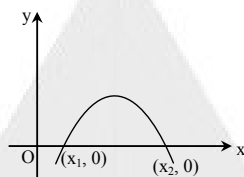
Q.22 If $x > 1$, then the minimum value of the expression $2 \log_{10} x - \log_x (0.01)$ is -

- (A) 2 (B) 4
(C) 1 (D) None of these

Q.23 If $7^{\log_7(x^2-4x+5)} = x - 1$, x may have values -

- (A) 2, 3 (B) 7
(C) -2, -3 (D) 2, -3

Q.24 The adjoining figure shows the graph of $y = ax^2 + bx + c$. Then -



- (A) $a < 0$ (B) $b^2 < 4ac$
(C) $c > 0$
(D) a and b are of opposite signs

Q.25 The expression $y = ax^2 + bx + c$ has always the same sign as c if -

- (A) $4ac < b^2$ (B) $4ac > b^2$
(C) $ac < b^2$ (D) $ac > b^2$

Q.26 If the roots of the equation $(x - a)(x - b) - k = 0$ be c & d then find the equation whose roots are a & b -

- (A) $(x - c)(x - d) + k = 0$
(B) $(x + c)(x - a) + k = 0$
(C) $(x - c) + (x - a) = 0$
(D) None of these

Q.27 The product of all the solutions of the equation

$$(x - 2)^2 - 3|x - 2| + 2 = 0$$

- (A) 0 (B) 2
(C) -4 (D) None of these

Q.28 If a, b, c are all positive and in H.P., then the roots of $ax^2 + 2bx + c = 0$ are -

- (A) Real (B) Imaginary
(C) Rational (D) Equal

Q.29 The number of real roots of the equation

$$(x - 1)^2 + (x - 2)^2 + (x - 3)^2 = 0 \text{ is -}$$

- (A) 1 (B) 2
(C) 3 (D) None of these

Q.30 If α, β are the roots of $ax^2 + bx + c = 0$; $\alpha + h, \beta + h$ are the roots of $px^2 + qx + r = 0$, and D_1, D_2 the respective discriminants of these equations, then $D_1 : D_2$ -

- (A) $\frac{a^2}{p^2}$ (B) $\frac{b^2}{q^2}$
(C) $\frac{c^2}{r^2}$ (D) None of these

ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	D	A	B	A	C	A	B	B	B	A
Que.	11	12	13	14	15	16	17	18	19	20
Ans.	B	C	C	C	A	C	B	B	C	A
Que.	21	22	23	24	25	26	27	28	29	30
Ans.	A	B	A	A-D	B	A	A	B	D	A