



CBSE NCERT Based Chapter wise Questions (2025-2026)

Class-X

Subject: Mathematics

Total : 6 Marks (expected) [MCQ(1)-1 Mark, LA(1)-5 Marks]

Chapter Name : *Quadratic Equations* (Chap : 4)

Level - 2 (Higher Order)

MCQ Type :

1. The quadratic equation whose one irrational root is $3 + \sqrt{2}$ is
(A) $x^2 - 7x + 5 = 0$ (B) $x^2 + 7x + 6 = 0$ (C) $x^2 - 7x + 6 = 0$ (D) $x^2 - 6x + 7 = 0$

[Hints : Irrational roots occur in conjugate pair.]

2. If the roots of $ax^2 + bx + c = 0$ are in the ratio $m : n$, then
(A) $mna^2 = (m + n)c^2$ (B) $mnb^2 = (m + n)ac$ (C) $mnb^2 = (m + n)^2 ac$ (D) $mnb^2 = (m - n)^2 ac$

[Hints : Use relations between roots and coefficients.]

3. If one root of the equation $x^2 + px + 12 = 0$ is 4, while the equation $x^2 + px + q = 0$ has equal roots, the value of q is
(A) $\frac{49}{4}$ (B) $\frac{4}{49}$ (C) 4 (D) 49

[Hints : Find p and use condition for equal roots.]

4. If α and β are the roots of the equation $2x^2 - 3x - 6 = 0$. The equation whose roots are $\frac{1}{\alpha}$ and $\frac{1}{\beta}$ is
(A) $6x^2 - 3x + 2 = 0$ (B) $6x^2 + 3x - 2 = 0$ (C) $6x^2 - 3x - 2 = 0$ (D) $x^2 + 3x - 2 = 0$

[Hints : Interchange coefficients of x^2 and constant term.]

5. If the roots of the equations $ax^2 + 2bx + c = 0$ and $bx^2 - 2\sqrt{ac}x + b = 0$ are simultaneously real, then
(A) $b = ac$ (B) $b^2 = ac$ (C) $a^2 = bc$ (D) $c^2 = ab$

[Hints : Use condition for real roots.]

6. The sum of the squares of two consecutive natural numbers is 313. The numbers are
(A) 12, 13 (B) 13, 14 (C) 11, 12 (D) 14, 15

[Hints : $x^2 + (x + 1)^2 = 313$.]

LA Type Question:

7. Solve for x : $\frac{1}{x+1} + \frac{1}{2x-1} = \frac{11}{7x+9}$, $x \neq -1, \frac{1}{2}, -\frac{9}{7}$.

8. A journey of 192 km from a town A to town B takes 2 hours more by an ordinary passenger train than a superfast train. If the speed of the faster train is 16 km/h more, find the speeds of the faster and the passenger trains.

[Hints : $\frac{192}{x} - \frac{192}{x+16} = 2$.]

9. Two water taps together can fill a tank in $9\frac{3}{8}$ hours. The tap of larger diameter takes 10 hours less than the smaller one to fill the tank separately. Find the time in which each tap can separately fill the tank.

[Hints : $\frac{1}{x} + \frac{1}{x-10} = \frac{8}{75}$.]

10. The speed of a boat in still water is 11 km/hour. It can go 12 km upstream and return downstream to the original point in 2 hours 45 minutes. Find the speed of the stream.

[Hints : $\frac{12}{11+x} + \frac{12}{11-x} = \frac{11}{4}$.]

11. If roots of equation $(c^2 - ab)x^2 - 2(a^2 - bc)x + b^2 - ac = 0$ are equal, then show that either $a = 0$ or $a^3 + b^3 + c^3 = 3abc$.

[Hints : Use $b^2 - 4ac = 0$.]

12. A plane left 30 minutes later than the schedule time and in order to reach its destination 1500 km away in time, it has to increase its speed by 250 km/h from its usual speed. Find its usual speed.

[Hints : $\frac{1500}{x} - \frac{1500}{250+x} = \frac{1}{2}$.]

ANSWER

1. (D)
2. (C)
3. (A)
4. (B)
5. (B)
6. (A)
7. $8 \pm 5\sqrt{3}$
8. 32 km/h, 48 km/h
9. 25 hrs., 15 hrs.
10. 5 km/hr.
12. 750 km/hr.

