Mathematics

Practice Test Paper 10

(Chapter 4: Quadratic Equations)

Class X | 2026–27

Time Allowed: 45 Minutes | Maximum Marks: 25

General Instructions

1. All 13 questions are compulsory. The paper has four sections: A, B, C and D.
2. Section A - 5 marks; Section B - 8 marks; Section C - 9 marks; Section D - 3 marks.
3. Choose one correct option in Section A. Show the necessary steps and reasoning in Sections B, C and D.
4. Use algebraic methods where required. Use of calculators is not allowed.

SECTION A

(5 questions × 1 mark = 5 marks)

1. The discriminant of $x^2 + x + 1 = 0$ is:

(A) 3 (B) 5

(C) −3 (D) −5

2. Which is a quadratic equation after simplification?

(A) $(x - 1)^2 = 2x + 3$

(B) $x(x + 1) = x^2 + 3$

(C) $(x + 1)^2 = x^2 + 2x$

(D) $x^3 = 8$

3. The roots of $4x^2 - 12x + 9 = 0$ are:

(A) −3/2 and −3/2 (B) 3 and 3

(C) 3/4 and 3/4 (D) 3/2 and 3/2

4. If a quadratic equation has two distinct real roots, then:

(A) $b^2 < 4ac$

(B) $b^2 > 4ac$

(C) $b^2 = 4ac$

(D) $a = 0$

5. If −1 is a root of $x^2 + kx - 6 = 0$, k equals:

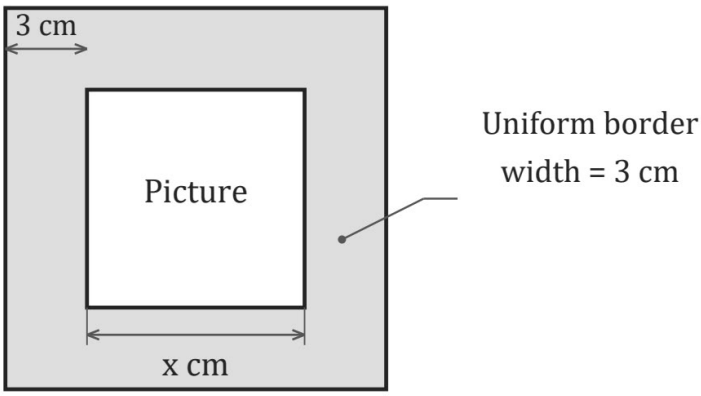
(A) 5 (B) 6

(C) −5 (D) −6

SECTION B

(4 questions × 2 marks = 8 marks)

6. A square picture has a 3 cm border on every side. The outer square has area 196 cm^2. Use the diagram to find the picture's side x.



Total area = 196 cm^2

7. Check whether $x^3 - 4x^2 - x + 1 = (x - 2)^3$ is quadratic after simplification. Show the standard form.

8. Find every k for which $x^2 - 2kx + k + 2 = 0$ has equal roots.

9. For which m is $(m - 1)x^2 + 2x + 3 = 0$ linear rather than quadratic? Solve it for that value.

SECTION C

(3 questions × 3 marks = 9 marks)

10. Two friends' present ages add to 20 years. Four years ago, the product of their ages was 48. Is this situation possible? Justify using a discriminant.

11. Use the quadratic formula to solve $5x^2 + 3x - 4 = 0$. Give exact roots.

12. ₹6500 is shared equally among some people. With 15 more people, each share would be ₹30 less. Find the original number of people.

SECTION D

(Application Based Question - 3 marks)

13. A cyclist covers 150 km at a uniform speed x km/h. Increasing the speed by 5 km/h would save one hour.

(i) Form a quadratic equation for x.

(ii) Find the original speed.

(iii) Find the original journey time.