



Nishant eAcademy

CBSE Sample Paper Class 12 Mathematics 2021-22

Subject: Mathematics Class: 12 Maximum Marks: 100 Duration: 3 hours

Section A: Objective Type (20 marks)

1. Multiple Choice Questions: a) The value of $\int_0^1 x^2 dx$ is: (A) 0 (B) $\frac{1}{3}$ (C) $\frac{1}{2}$ (D) 1
b) The equation of a line parallel to the x-axis is: (A) $y = 0$ (B) $x = 0$ (C) $y = c$ (D) $x = c$
2. Fill in the blanks: a) The value of $\lim_{x \rightarrow 0} \frac{\sin x}{x}$ is _____. b) The slope of the tangent to the curve $y = x^2$ at the point $(2, \text{_____})$.

Section B: Short Answer Type (40 marks)

3. Differentiate $y = \frac{1}{\sqrt{x}}$ with respect to x .
4. Find the value of $\cos 60^\circ$ using the trigonometric identity.
5. Solve the equation $x^2 - 5x + 6 = 0$ using the quadratic formula.
6. Prove that the sum of the angles of a triangle is 180 degrees.

Section C: Long Answer Type (40 marks)

7. Find the area enclosed by the curve $y = x^2$ and the x-axis in the interval $[0, 1]$.
8. Prove that the diagonals of a parallelogram bisect each other.
9. A particle moves along the x-axis such that its velocity is given by $3t^2 - 6t + 2$, where t is the time in seconds. Find the acceleration of the particle.
10. A manufacturer finds that the cost of producing x units of a commodity is given by $C(x) = 0.5x^2 + 20x + 1000$. Find the number of units that should be produced to minimize the cost.