



Nishant eAcademy

CBSE Sample Paper Class 12 Mathematics 2019-20

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

Section A: Objective Type (20 marks)

1. Multiple Choice Questions: a) The derivative of e^x with respect to x is: (A) e^x
(B) e^{-x} (C) $e^x + 1$ (D) $e^x - 1$
b) The equation of the tangent to the curve $y = x^2$ at the point $(1, 1)$ is: (A) $y = 2x$
(B) $y = x + 1$ (C) $y = 2x + 1$ (D) $y = x - 1$
2. Fill in the blanks: a) The value of $\sin^{-1}\left(\frac{1}{2}\right)$ is _____. b) The value of $\log 1$ is _____.

Section B: Short Answer Type (40 marks)

3. Find the value of $\lim_{x \rightarrow 0} \frac{\sin 2x}{3x}$.
4. Solve the differential equation $\frac{dy}{dx} = 2x$.
5. Find the equation of the circle passing through the points $(1, 2)$, $(3, 4)$, and $(5, 6)$.
6. If A and B are two events such that $P(A) = \frac{1}{4}$, $P(B) = \frac{1}{3}$, and $P(A \cap B) = \frac{1}{6}$, find $P(A \cup B)$.

Section C: Long Answer Type (40 marks)

7. Prove that the sum of the squares of any three consecutive natural numbers is divisible by 3.
8. A particle moves in a straight line such that its displacement at any time t is given by $s(t) = 2t^3 - 9t^2 + 12t$. Find the time at which the particle comes to rest.
9. A bag contains 5 red balls and 3 green balls. Two balls are drawn at random. Find the probability that at least one ball is green.



[Download Nishant eAcademy App](#)

10. Prove that $\tan^2\theta - \sin^2\theta = \sec^2\theta - 1$ for all values of θ for which the expressions are defined.

nishanteacademy.in

[Subscribe Nishant eAcademy YouTube Channel For Video Solution](#)