



B.K. BIRLA CENTRE FOR EDUCATION

SARALA BIRLA GROUP OF SCHOOLS
A CBSE DAY-CUM-BOYS' RESIDENTIAL SCHOOL



PERIODIC TEST-2, 2025-26 APPLIED MATHEMATICS

Class: XI B
Date: 10 /11/25
Admission no:

Time: 1hr
Max Marks: 25
Roll no:

General Instructions:

Question 1 to 5 carries ONE mark each. Questions 6 to 9 carries TWO marks each.
Questions 10 to 13 carries THREE marks each.

1. $\lim_{x \rightarrow 1} \frac{x^m - 1}{x^n - 1}$ is equal to :
a) 1 b) m/n c) $-m/n$ d) m^2/m^2
2. The value of $\lim_{x \rightarrow 0^-} [x]$:
a) -1 b) 0 c) 1 d) does not exist
3. The number of points of discontinuity of f defined by $f(x) = |x| - |x - 1|$:
a) 1 b) -1 c) R d) No point of discontinuity
4. The derivative of e^{x^2} :
a) $2xe^{x^2}$ b) xe^x c) e^{x^2} d) $-2xe^x$
5. If $f(x) = 1 + x + \frac{x^2}{2} + \dots + \frac{x^{100}}{100}$, then find $f'(1)$ is equal to:
a) 50 b) 100 c) 200 d) 400
6. Find the limit of $\lim_{x \rightarrow 1/2} \frac{4x^2 - 1}{2x - 1}$.
7. Determine whether the following limit exist: $\lim_{x \rightarrow 0} \frac{x}{|x|}$.
8. If $f(x) = x^2 - 9x + 20$, find $f'(x)$ and hence find $f'(22)$.
9. Find the derivative of the following: $(2x+3)\sqrt{x}$.
10. If $y = \sqrt{x} - \frac{1}{\sqrt{x}}$, show that $2x \frac{dy}{dx} + y = 2\sqrt{x}$.
11. Differentiate the following w.r.t. x $\log(e^{mx} + e^{-mx})$.
12. Evaluate : $\lim_{x \rightarrow 4} \frac{3 - \sqrt{5+x}}{1 - \sqrt{5-x}}$.
13. If $\lim_{x \rightarrow -a} \frac{x^9 + a^9}{x+a} = 9$, find the values of a .