DPP
DAILY PRACTICE PROBLEMS

CLASS : XIth | **SUBJECT : MATHS**
DATE : | **DPP NO. :9**

Topic :-LIMITS AND DERIVATIVES

1. The value of $\lim_{x\to\infty}\left(\frac{x^2+6}{x^2-6}\right)^x$ is given by

a) 0 b) 1 c) -1 d) None of these

2. $\lim_{x\to\infty}\left(\frac{x^2+5x+3}{x^2+x+2}\right)^x$ is equal to

a) e^4 b) e^2 c) e^3 d) e

3. If $G(x)=\sqrt{25-x^2}$, then $\lim_{x\to1}\frac{G(x)-G(1)}{x-1}$ has the value

a) $\frac{1}{\sqrt{24}}$ b) $\frac{1}{5}$ c) $-\sqrt{24}$ d) $-1/5$

4. $\lim_{x\to1}\cos^{-1}\left(\frac{1-\sqrt{x}}{1-x}\right)$ is equal to

a) $\frac{\pi}{3}$ b) $\frac{\pi}{6}$ c) $\frac{\pi}{2}$ d) $\frac{\pi}{4}$

5. $\lim_{x\to1}\frac{\sin(e^x-1)}{\log x}$ is equal to

a) 1 b) 0 c) e d) e^{-1}

6. $\lim_{x\to\frac{\pi}{6}}\left[\frac{3\sin x-\sqrt{3}\cos x}{6x-\pi}\right]$

a) $\sqrt{3}$ b) $\frac{1}{\sqrt{3}}$ c) $-\frac{1}{\sqrt{3}}$ d) $-\frac{1}{3}$

7. Let $f:R\to R$ be a differentiable function such that $f(2)=2$. Then, the value of $\lim_{x\to2}\int_2^{f(x)}\frac{4t^3}{x-2}dt$, is

a) $6f'(2)$ b) $12f'(2)$ c) $32f'(2)$ d) None of these

8. $\lim_{x\to\frac{\pi}{4}}\frac{\int_2^{\sec^2 x}f(t)dt}{x^2-\frac{\pi^2}{16}}$ equals

a) $\frac{8}{\pi}f(2)$ b) $\frac{2}{\pi}f(2)$ c) $\frac{2}{\pi}f\left(\frac{1}{2}\right)$ d) $4f(2)$

9. If $f(x)=\sqrt{\frac{x-\sin x}{x+\cos^2 x}}$, then $\lim_{x\to\infty}f(x)$ is

a) 0 b) ∞ c) 1 d) None of these

10. Let $f(x)$ be twice differentiable function such that $f''(0) = 2$. Then, $\lim_{x\to 0} \frac{2f(x) - 3f(2x) + f(4x)}{x^2}$ is

a) 6 b) 3 c) 12 d) None of these

11. The value of $\lim_{x\to \pi/2} \frac{\cot x - \cos x}{(\pi - 2x)^3}$

a) 1 b) $\frac{1}{16}$ c) 16 d) None of these

12. The value of $\lim_{x\to\infty} \left(\frac{x+3}{x-1}\right)^{x+3}$, is

a) e b) e^2 c) e^4 d) $1/e$

13. The value of $\lim_{x\to 7} \frac{2-\sqrt{x-3}}{x^2-49}$ is

a) 2/9 b) -2/49 c) 1/64 d) -1/56

14. $\lim_{x\to\infty} \frac{\sqrt{x^2+1} - \sqrt[3]{x^3+1}}{\sqrt[4]{x^4+1} - \sqrt[5]{x^4+1}}$ equals

a) 1 b) 0 c) -1 d) None of these

15. Let f:R→R be a differentiable function having $f(2) = 6$, $f'(2) = \left(\frac{1}{48}\right)$. Then, $\lim_{x\to 2} \frac{\int_6^{f(x)} 4t^3\, dt}{x-2}$ is equals

a) 18 b) 12 c) 36 d) 24

16. If $g(x)$ is a polynomial satisfying $g(x)g(y) = g(x) + g(y) + g(xy) - 2$ for all real x and y and $g(2) = 5$, then $\lim_{x\to 3} g(x)$ is

a) 9 b) 10 c) 25 d) 20

17. $\lim_{x\to\pi/4} \frac{1 - \cot^3 x}{2 - \cot x - \cot^3 x}$, is

a) $\frac{11}{4}$ b) $\frac{3}{4}$ c) $\frac{1}{2}$ d) None of these

18. If $[x]$ denotes the greatest integer less than or equal to x, then the value of $\lim_{x\to 1}\{1 - x + [x-1] + [1-x]\}$ is

a) 0 b) 1 c) -1 d) None of these

19. If $\lim_{x\to 1} \frac{ax^2 + bx + c}{(x-1)^2} = 2$, then (a, b, c) is

a) (2, -4, 2) b) (2, 4, 2) c) (2, 4, -2) d) (2, -4, -2)

20. $\lim_{x\to 1} \frac{2x^2 + x - 3}{3x^3 - 3x^2 + 2x - 2}$ is equal to

a) 1 b) 2 c) -1 d) -2