DPP
DAILY PRACTICE PROBLEMS

CLASS : XIth **SUBJECT : MATHS**
DATE : **DPP NO. :10**

Topic :-LIMITS AND DERIVATIVES

1. $\lim_{x\to\infty}(\sqrt{x+\sqrt{x+\sqrt{x}}}-\sqrt{x})$ is equal to

   a) ½ b) 0 c) 1 d) None of these

2. The value of $\lim_{x\to\infty}\left(\frac{x+6}{x+1}\right)^{x+4}$, is

   a) e b) e^2 c) e^4 d) e^5

3. Let α and β be the roots of $a\,x^2+b\,x+c=0$, then $\lim_{x\to a}\frac{1-\cos(a\,x^2+bx+c)}{(x-\alpha)^2}$ is equal to

   a) 0 b) $\frac{1}{2}(\alpha-\beta)^2$ c) $\frac{\alpha^2}{2}(\alpha-\beta)^2$ d) $-\frac{\alpha^2}{2}(\alpha-\beta)^2$

4. $\lim_{x\to 0}(1-ax)^{1/x}$ is equal to

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

5. If $\lim_{n\to\infty}\frac{1-(10)^n}{1+(10)^{n+1}}=\frac{-\alpha}{10}$, then the value of α is

   a) 0 b) -1 c) 1 d) 2

6. The value of $\lim_{n\to\infty}\frac{\sqrt{n^2+1}+\sqrt{n}}{\sqrt[4]{n^3+n}-\sqrt[4]{n}}$, is

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

7. The value of $\lim_{x\to 2}\frac{5}{\sqrt{2}-\sqrt{x}}$ is

   a) $10\sqrt{2}$ b) $+\infty$ c) $-\infty$ d) Does not exist

8. $\lim_{n\to\infty}\frac{2^{-n}(n^2+5n+6)}{(n+4)(n+5)}$ is equal to

   a) 0 b) 1 c) ∞ d) $-\infty$

9. If $f(x)=\begin{cases}x\sin\frac{1}{x} & x\neq 0\\ 0 & x=0\end{cases}$, then $\lim_{x\to 0}f(x)$ is equal to

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

10. $\lim_{x\to a}\frac{\log(x-a)}{\log(e^x-e^a)}$ is equal to

a) 0 b) 1 c) a d) Does not exist

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

a) 0 b) e^{-1} c) e^{-2} d) e^{-3}

12. $\lim_{x\to 0}\left[\frac{3^x+3^{-x}-2}{x^2}\right]$ is equal to

a) $2\log 3$ b) $-(\log 3)^2$ c) $-2\log 3$ d) $(\log 3)^2$

13. $\lim_{x\to 0}\left(\frac{e^x+e^{-x}-2}{x^2}\right)^{1/x^2}$ is equal to

a) $e^{1/2}$ b) $e^{1/4}$ c) $e^{1/b}$ d) $e^{1/12}$

14. The value of $\lim_{x\to\infty}\left(\frac{\pi}{2}-\tan^{-1}x\right)^{1/x}$ is

a) 0 b) 1 c) -1 d) e

15. The value of $\lim_{x\to 1}\left\{\frac{x^3+2x^2+x+1}{x^2+2x+3}\right\}^{\frac{1-\cos(x-1)}{(x-1)^2}}$, is

a) e b) $e^{1/2}$ c) 1 d) None of these

16. $\lim_{x\to -3}\frac{3x^2+ax+a-7}{x^2+2x-3}$ exists, then a is equal to

a) 10 b) 15 c) -15 d) -10

17. $\lim_{x\to\infty}\left(1-\frac{4}{x-1}\right)^{3x-1}$ is equal to

a) e^{12} b) e^{-12} c) e^4 d) e^3

18. $\lim_{n\to\infty}\left\{\frac{1}{1-n^2}+\frac{2}{1-n^2}+\frac{3}{1-n^2}+\ldots+\frac{n}{1-n^2}\right\}$ is equal to

a) 0 b) $-1/2$ c) $1/2$ d) 1

19. $\lim_{x\to 0}\frac{x\tan 2x-2x\tan x}{(1-\cos 2x)^2}$, is

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

20. $\lim_{n\to\infty}\frac{3.2^{n+1}-4.5^{n+1}}{5.2^n+7.5^n}$ is equal to

a) $\frac{3}{5}$ b) $-\frac{4}{7}$ c) $-\frac{20}{7}$ d) 0