INDIAN SCHOOL AL WADI AL KABIR

DEPARTMENT OF MATHEMATICS 2020 – 2021

Work Sheet- Limits and Derivatives – Class XI

1. $\lim_{x\to\pi}\frac{\sin x}{x-\pi}$ is equal to

   (a) 1 (b) 2 (c) –1 (d) –2

2. $\lim_{x\to-1}\frac{x^5+1}{x+1}$ equals

   (a) –5 (b) 5 (c) 10 (d) –10

3. $\lim_{x\to0}\frac{x^2\cos x}{1-\cos x}$ is

   (a) 2 (b) $\frac{3}{2}$ (c) $-\frac{3}{2}$ (d) 1

4. $\lim_{x\to0}\frac{(1+x)^n-1}{x}$ is

   (a) n (b) 1 (c) $-n$ (d) 0

5. $\lim_{x\to0}\frac{x\cos(\pi+x)}{\sin x}$ is equal to

   (a) 0 (b) 1 (c) –1 (d) π

6. $\lim_{x\to a}\frac{x^m-a^m}{x^n-a^n}$ is equal to

   (a) $\frac{m}{n}a^{m-n}$ (b) $\frac{m}{n}$ (c) a^{m-n} (d) $\frac{m}{n}a^{m-1}$

7. $\lim_{\theta\to0}\frac{1-\cos4\theta}{1-\cos6\theta}$ is equal to

   (a) $\frac{4}{9}$ (b) $\frac{1}{2}$ (c) $-\frac{1}{2}$ (d) –1

8. $\frac{d}{dx}(\sin x\cos x)$ is equal to

   (a) sin 2x (b) cos 2x (c) sin x + cos x (d) $\sin^2 x$

9. If $f(x)=\frac{x+3}{x+2}$, then $f'(x)$ is equal to

(a) $\frac{1}{x+2}$ (b) $\frac{-1}{(x+2)^2}$ (c) $\frac{1}{(x+2)^2}$ (d) $\frac{x}{(x+2)^2}$

10. If $f(x)=\frac{x-4}{2\sqrt{x}}$, then $f'(1)$ is equal to

(a) $\frac{5}{4}$ (b) $\frac{4}{5}$ (c) 1 (d) 0

11. Find the derivative of $x^5\,(3-6x^{-9})$ with respect to x.

12. Evaluate: $\lim_{x\to 1}\frac{x^{15}-1}{x^{10}-1}$.

13. Find $\lim_{x\to 1}\frac{x^2-1}{x^2+1}$.

14. Find the derivative of $f(x)=\frac{x^2+3}{x-1}$

15. Find $\lim_{x\to 1}\left[\frac{x^2+1}{x+100}\right]$

16 Find the derivative of $\frac{1}{ax^2+b}$ with respect to x.

17 What is $\lim_{x\to 0}\frac{(1+x)^5-1}{x}$

18 Find the derivative of $x \sin x$ with respect to x.

Answers

1.	C
2.	B
3.	A
4.	A
5.	C

6.	A
7.	A
8.	B
9.	B
10.	A

11	$15x^4+\frac{24}{x^5}$
12.	3/2
13.	0
14.	$\frac{x^2-x-3}{(x-1)^2}$

16.	$-\frac{2ax}{(ax^2+b)^2}$
15.	2/101
17	5
18	sin x + x. cos x