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Practice Set 4 Function & LIMIT

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Topics:

- 1. Function and simple examples
- 2. Limit of a Function
- 3. Standard formulae of Limit and related simple examples

DDCET final exam weightage of this topic :

3 Questions (6 Marks)

Total Practice sets of this topic:

5 (sets) \times 30 (questions) = 150 Questions

Total Practice tests of this topic:

2 (exams) \times 30 (questions) = 60 Questions

Offline / Online during lecture :

4 (lectures) X 50 (Questions) = 200 Question



- 1. Function and simple examples
- 2. Limit of a Function
- 3. Standard formulae of Limit and related simple examples

1.
$$\lim_{x\to 0} \left(\frac{\sin x}{x}\right) =$$

- a. 1
- b. 0
- $c. \infty$
- d. does not exist

2.
$$\lim_{x\to\infty} (1/x) =$$

- $a. \infty$
- b. 1
- c. 0
- $d. -\infty$

$$3. \lim_{x\to 0} \left(\frac{1-\cos x}{x^2}\right) =$$

- a. 0
- b. 1
- c. 1/2
- $d. \infty$

4.
$$\lim_{x \to a} \left(\frac{x^2 - a^2}{x - a} \right) =$$

- a. 2a
- b. a
- c. a²
- d. 0

$$5. \lim_{x\to 0} \left(\frac{\tan x}{x}\right) =$$

- a. 0
- b. 1
- $c. \infty$
- d. does not exist







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6.
$$\lim_{x\to 0} \left(\frac{e^x-1}{x}\right) =$$

- a. 0
- b. 1
- c. e
- $d. \infty$

7.
$$\lim_{x\to\infty} \left(\frac{x^2+1}{x}\right) =$$

- $a. \infty$
- b. 1
- c. 0
- d. does not exist

8.
$$\lim_{x\to 2} \left(\frac{x^2-4}{x-2}\right) =$$

- a. 2
- b. 3
- c. 4
- d. 6

9.
$$\lim_{x\to 0} \frac{x}{|x|} =$$

- a. 1
- b. -1
- c. does not exist
- d. 0

$$10.\lim_{x\to\infty}\left(\frac{3x^2+5}{x^2+2}\right) =$$

- a. 1
- b. 3
- $c. \infty$
- d. 0







- 1. Function and simple examples
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$$11.\lim_{x\to 0}\frac{\sin 2x}{x} =$$

- a. 2
- b. 1
- c. 1/2
- d. 0

$$12.\lim_{x\to 0}\frac{\cos 4x}{x} =$$

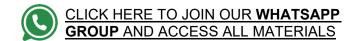
- a. 2
- b. 3
- c. 4
- d. does not exist

$$13.\lim_{x\to 0} \frac{2^{x}-1}{x} =$$

- a. ln2
- b. log₂e
- c. 1
- d. 0

$$14.\lim_{x\to 0} \frac{7^{x}-1}{x} =$$

- a. $log_{10}7$
- b. log_e7
 - c. 1
 - d. 0







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$$15.\lim_{x\to\infty}\left(1+\frac{1}{n}\right)^n=$$

- a. 0
- b. 1
- c. e
- $d. \infty$

$$16.\lim_{x\to 2}\frac{x^5-32}{x-2} =$$

- a. 80
- b. 160
- c. 40
- d. 0

17.
$$\lim_{x\to 0} \frac{a^{x}-1}{x}$$
 where $a > 0 =$

- a. 1
- b. log_e a
- c. a
- d. 0

$$18. \lim_{x \to 0+} \ln(x) =$$

- a. 0
- b. ∞
 - c. -∞
 - d. undefined





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$$19.\lim_{x\to 0+}\left(\frac{x+1}{x}\right) =$$

- a. 1
- b. 0
- $c. \infty$
- d. 2

$$20.\lim_{x\to 0^+} \left(\frac{1}{x}\right) =$$

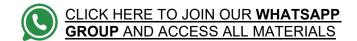
- a. 0
- **b**. ∞
- c. -∞
- d. does not exist

$$21.\lim_{x\to\infty}\left(\frac{x+2}{3x+1}\right) =$$

- a. 1
- b. 2
- c. 3
- d. 1/3

$$22.\lim_{x\to\infty} \left(\frac{2x^2 + 5x - 6}{4x^2 + 4x - 3} \right) =$$

- a. 1
- b. 1/2
 - c. 2/5
 - d. 0







1. Function and simple examples

2. Limit of a Function

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$$23.\lim_{x\to 0} (x \cdot \tan x) =$$

a. 0

b. 1

 $c. \infty$

d. does not exist

24.
$$\lim_{x \to 0} \left(\frac{10^x - 5^x}{x} \right) =$$
_____. [DDCET-2024]

a. $log_e\left(\frac{1}{2}\right)$

b. $log_e(10)$

c. $log_e(5)$

d. $log_e(2)$

25.
$$\lim_{n \to \infty} \left(\frac{3n^2 - 11n - 13}{(4n - 5)(7 - 6n)} \right) =$$
. [DDCET-2024]

a. $\frac{1}{4}$

b. $-\frac{1}{8}$

c. $\frac{1}{6}$

d. $-\frac{1}{4}$

$$26.\lim_{x\to 0} (\sec^2 x - \tan^2 x) =$$

a. 1

b. -1

c. 0

d. $\frac{\pi}{2}$







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27.
$$\lim_{n\to\infty} \left(\frac{4n^2+5n-1}{2n^2+3n+7}\right) = \underline{\hspace{1cm}}$$

- a. 0
- **b. 2**
- c. 1
- $d. \infty$

$$28.\lim_{x\to 0} \left(\frac{e^{3x}-e^{2x}}{x}\right) = \underline{\qquad}$$

- a. 1
- b. $e^3 e^2$
- c. -1
- d. 0

$$29.\lim_{x\to 0}\frac{\sin x^0}{x} =$$

- a. 1
- b. 0

$$30.\lim_{x\to 0} \frac{\sin^2 x + x^2 \cdot \cos^2 x}{x^2} =$$

- a. 1
- b. 1/2
- c. 0
- d. 2



