

Step Academy official

Model Town Grw PH: 03016652757

STUDENT NAME	
PAPER CODE	10591
TIME ALLOWED	60
Paper Date	12-02-2026



CLASS	New 1st Year (FSC/ICS)
SUBJECT	Mathematics
TOTAL MARKS	25
Paper Type	

Q1. Choose the correct answer.

5X1=5

1. $\lim_{x \rightarrow 0} \frac{\sin ax}{\sin bx} = \dots\dots:$

- (A) $\frac{a}{b}$ (B) $\frac{-b}{a}$ (C) $\frac{-a}{b}$ (D) $\frac{b}{a}$

2. $\lim_{x \rightarrow 0} \frac{1 - \cos \theta}{\theta}$ equal to

- (A) zero (B) -1 (C) 1 (D) None

3. $\lim_{x \rightarrow 0} \left(\frac{x}{\tan x} \right) = ?$

- (A) 0 (B) 1 (C) 2 (D) 3

4. $\lim_{x \rightarrow 0} \frac{e^x - 1}{x} = ?$

- (A) 0 (B) 1 (C) e (D) 2

5. A function $f(x)$ is not continuous at $x=c$ then it is called at $x=c$:

- (A) Discontinuous (B) Defined (C) Stationary (D) None of these

Q2. write the answers of following questions.

5X2=10

1. Evaluate the following limit by using theorems of limits: $\lim_{x \rightarrow 2} \sqrt{x^3 + 1} - \sqrt{x^2 + 5}$

2. Evaluate: $\lim_{x \rightarrow 1} \frac{x^2 - 1}{x^2 - x}$

3. Evaluate $\lim_{x \rightarrow -\infty} \frac{4x^4 - 5x^3}{-3x^5 + 2x^2 + 1}$

4. If $f(x) = \begin{cases} 3x & \text{if } x \leq -2 \\ x^2 - 1 & \text{if } -2 < x < 2 \\ 3 & \text{if } x \geq 2 \end{cases}$ discuss continuity at $x=2$ and $x=-2$.

5. Evaluate the following limit: $\lim_{x \rightarrow 1} \frac{x^3 - 1}{x^2 - 1}$

- 1 . The cost of produce x units is: $C(x) = \begin{cases} 5x + 20 & \text{if } x \leq 10 \\ 6x + 10 & \text{if } x > 10 \end{cases}$ Is the cost function continuous at $x=10$?
- 2 . Discuss continuity of $f(x)$ at $x=3$, when $f(x) = \begin{cases} x - 1 & , x < 3 \\ 2x + 1 & , x \geq 3 \end{cases}$.