

Department of Mathematics  
**FYBSc(Semester I)19ScMatU103**

Based on Differential Calculus  
Subject : Mathematics Practical-I (19ScMatU103)  
Practical Incharge: Rima Ahuja  
**Practical 8:Limit and Continity**

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1. Evaluate  $\lim_{x \rightarrow 3} \frac{x^4 - 81}{2x^2 - 5x - 3}$ .

2. Evaluate  $\lim_{x \rightarrow 4} \frac{4 - \sqrt{x + 12}}{x - 4}$ .

3. Evaluate

(a)  $\lim_{x \rightarrow 3^-} \frac{|x - 3|}{x - 3}$

(b)  $\lim_{x \rightarrow 1^+} \frac{|x^2 - 1|}{x - 1}$

4. Discuss the continuity of function  $f(x) = \frac{x^2 + 3x + 5}{x^2 - x - 2}$  in

(a)  $[3, 6]$

(b)  $[1, 3]$

5. Discuss the continuity of function  $f(x)$  on  $[0, 4]$

$$f(x) = \begin{cases} x^2 + 2, & 0 \leq x < 1 \\ 4x - 1, & 1 \leq x \leq 2 \\ x^2 - 1, & 2 < x \leq 4 \end{cases}$$