COMSATS University Islamabad (CUI)

Department of Computer Sciences
Mid Term Exams, Spring 2025.

Program: (BCS/BSE/BCYT/BSDS/BAI) II
Max Marks: 25 marks
Date: 15th April, 2025.

Pre-Calculus-II (MTH-092)
Time Allowed: 1hr: 30 minutes
Instructor: Itrat Rubab.

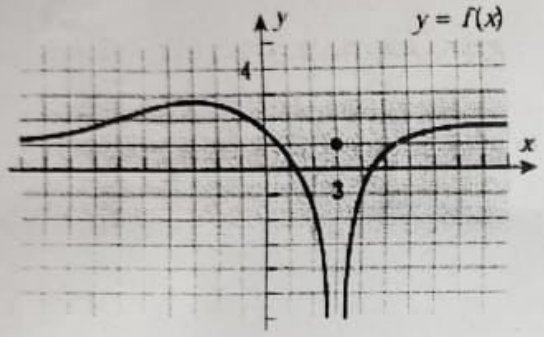
Instruction for attempting papers:

1. **Mobile phones and digital dairies are not allowed in the examination hall.**
2. **Answer all questions.**
3. **All questions carry equal marks.**

Quetion#1:

For the function $f(x)$ graphed in the accompanying figure, find

a) $\lim_{x\to 3} f(x)$ **b)** $\lim_{x\to -\infty} f(x)$; **c)** $\lim_{x\to +\infty} f(x)$ **d)** $f(3)$.



Question#2:

Find a nonzero values of the constants k, that will make the given function continuous at $x = 0$.

$$f(x) = \begin{cases} \frac{tankx,}{x} & ; \quad x < 0 \\ 3x + 2k^2 & ; \quad x \geq 0 . \end{cases}$$

Question#3:

Find a_n, if $a_4 = \frac{8}{27}$ and $a_7 = \frac{-64}{729}$ of a geometric sequence.

Question#4:

Use binomial theorem to expand the given expression and write the result in simplified form, $\left(x - \frac{1}{x}\right)^5$.

Question#5:

Let $z = x + iy$, then find the values of x and y, if , $(1 + 3i)z = 1 - 2i$.

GOOD LUCK