



COMSATS University Islamabad

Attock Campus



Department of Mathematics

Assignment # 02

Class: BCS (3rd)
Subject: Calculus and Analytic Geometry
Instructor: Dr. Atiq ur Rehman

Due Date: 10-10-2024 (1250PST)
Course Code: MTH104
Marks: 9

Name: _____

Reg: FA23-BCS-_____

Question # 1: Find the largest subset of \mathbb{R} that can serve as the domain of the given function.

(i) $f(x) = \sqrt{4 - x^2}$

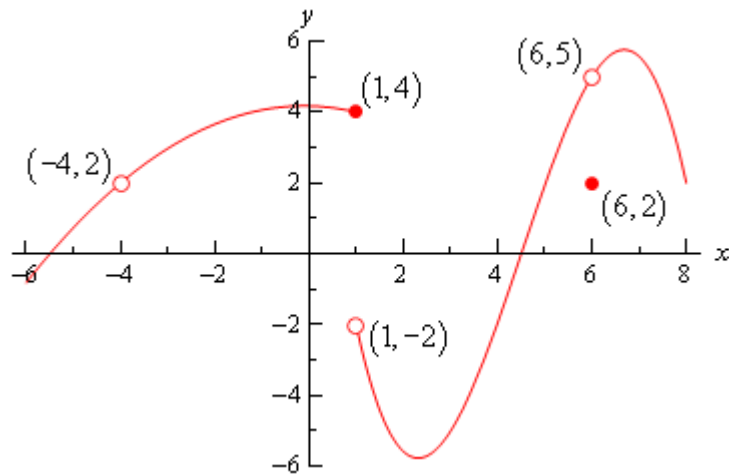
(ii) $g(x) = \frac{4x+8}{6x^2+13x-5}$

Question # 2: Sketch the graph and determine the domain and range of the given function.

$$k(x) = \begin{cases} -2x - 3 & \text{if } x \leq -1 \\ x^3 & \text{if } |x| < 1 \\ 2x & \text{if } x \geq 1 \end{cases}$$

Question # 3: Draw the graph of $f(x) = x^2 + 3x + 1$. Find the roots and mention it on the graph.

Question # 4: Given the following graph of function f :



- | | |
|--|---|
| (a) $f(-4) =$ _____ | (b) $\lim_{x \rightarrow 4^-} f(x) =$ _____ |
| (c) $\lim_{x \rightarrow 4^+} f(x) =$ _____ | (d) $\lim_{x \rightarrow 4} f(x) =$ _____ |
| (e) $f(1) =$ _____ | (f) $\lim_{x \rightarrow 1^-} f(x) =$ _____ |
| (g) $\lim_{x \rightarrow 1^+} f(x) =$ _____ | (h) $\lim_{x \rightarrow 1} f(x) =$ _____ |
| (i) $f(6) =$ _____ | (j) $\lim_{x \rightarrow 6^-} f(x) =$ _____ |
| (k) $\lim_{x \rightarrow 6^+} f(x) =$ _____ | (l) $\lim_{x \rightarrow 6} f(x) =$ _____ |
| (m) Number of zeros = _____ | (n) Domain = _____ |
| (o) Is the function f continuous at $x = -4$: <input type="checkbox"/> Yes <input type="checkbox"/> No | |
| (p) Is the function f continuous at $x = 1$: <input type="checkbox"/> Yes <input type="checkbox"/> No | |
| (q) Is the function f continuous at $x = 6$: <input type="checkbox"/> Yes <input type="checkbox"/> No | |
| (r) Is the function f left continuous at $x = 1$: <input type="checkbox"/> Yes <input type="checkbox"/> No | |
| (s) Is the function f right continuous at $x = 1$: <input type="checkbox"/> Yes <input type="checkbox"/> No | |
| (t) Is the function f continuous at $x = 0$: <input type="checkbox"/> Yes <input type="checkbox"/> No | |
| (u) Is the function f continuous on $(-4, 1)$: <input type="checkbox"/> Yes <input type="checkbox"/> No | |
| (v) Is the function f continuous on $[-6, 8]$: <input type="checkbox"/> Yes <input type="checkbox"/> No | |