Department of Mathematics and Statistics KFUPM
MATH 101-08 Quiz#2, Time: 50 mins

Student's Name: _____ ID: _____Section No: _____

Class Time: _____ Instructor's Name: _____

Q.No.1:- If the average rate of change of the function $f(x) = 3x^2 - 1 + g(x)$ over the interval $[3\,, 5]$ is 4, find the average rate of change of the function $g(x)$ over the same interval.

Q.No.2:- Use the Intermediate Value Theorem (IVT) to show that the equation $x^2 - 2x + 2 = \sqrt{5x + 16}$ has a solution.

Q.No.3:- Let $f(x) = \frac{\ln(2x+1)}{x^2-4}$

(a) Where is f continuous?

(b) Find all vertical asymptotes of f. Justify your answer using limits.

Q.No.4:-

(a) Use limits to find all horizontal asymptotes of the graph of $f(x) = \frac{|x-1|(x+1)}{(x^2-1)}$.

(b) Use limits to find all vertical asymptotes of the graph of $f(x) = \frac{|x-1|}{x(x^2-1)}$.