Department of Mathematics and Statistics KFUPM
MATH 101-09 Bonus Quiz, Time: 50 mins

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

Q.No.1:- Find all points of Inflection when $f(x) = \cos x + \sqrt{3} \sin x$, $0 \leq x \leq 2\pi$.

Final Answer (**1 point**): _____

Work Shown (**2 points**):

Q.No.2:- Find absolute maxima and absolute minima of $f(x) = \left| x^3 - 9x \right|$ in $[-2, 3]$.

Final Answer (**1 point**): _____

Work Shown (**2 points**):

Q.No.3:- Find $\lim\limits_{x \to \infty} \left(\frac{x+2}{x-1} \right)^x$

Final Answer (**1 point**): _____

Work Shown (**2 points**):

Q.No.4:- A window is in the form of a rectangle surmounted by a semicircle with total perimeter of 100π cm. . In order to have maximum light, find the dimensions of rectangle.

Final Answer (**1 point**): _____

Work Shown (**2 points**):

Q.No.5:- If $G(x)$ is an antiderivative of $g(x) = \dfrac{x \csc^2(\pi x) - x + 1}{x}$, and the graph of $G(x)$ passes through the point $\left(\frac{1}{4}, 0\right)$. Find $G(x)$.

Final Answer (**1 point**): _____

Work Shown (**2 points**):