Department of Mathematics and Statistics KFUPM
MATH 101-06 Quiz#3, Time: 40 mins

Student's Name: _____ ID: _____Section No: **06**

Q.No.1:- If $g(x) = \frac{h(x)}{x}$, $h(2) = 4$, $h'(2) = -3$, then find the slope of the normal line to the curve $g(x)$ at $x = 2$.

Final Answer (**2 point**): _____

Work Shown (**4 points**):

Q.No.2:- Find all the values of x for which the graph of the function $f(x) = \frac{\sec x}{1+\tan x}$, $0 \leq x \leq 2\pi$, has a horizontal tangent.

Final Answer (**2 point**): _____

Work Shown (**5 points**):

Q.No.3:- If $\lim_{x\to 2}\left(\frac{x^2+x-6}{\sin(x-2)}+\frac{\tan\left(\frac{\pi x}{8}\right)}{x}\right)=\frac{a}{b}$ where a and b are positive integers and $\frac{a}{b}$ is in its lowest/simplest form, then find the value of $a+b$.

Final Answer (**2 point**): _____

Work Shown (**4 points**):

Q.No.4:- If the tangent line to the curve $y = x^2 + x$ at $x = a$, $a > 0$ passes through the point $(1,1)$, then find the value of a.

Final Answer (**2 point**): _____

Work Shown (**4 points**):

With Best Wishes