King Fahd University of Petroleum and Minerals
Department of Mathematics and Statistics
Math 101 Major Quiz 4

Name : ..... **ID** #..... Serial #: .....

Question 1[4 points]: Find the maximum and absolute minimum values of

$$g(x) = \ln(x^2 + x + 1), \qquad x \in [-1, 1].$$

Question 2 [3 points]: Find all numbers c that satisfy the conclusion of the Rolle's Theorem for

$$f(x) = \sin(x/2), \qquad x \in [\pi/2, 3\pi/2].$$

Question 3 [4 points]: Study where the following curve is decreasing/increasing, and concave up/down,

$$f(x) = x + 2\sin x, \quad 0 \leq x \leq 2\pi.$$

Question 4 [4 points]: Use the I'Hospital Rule to find

$$\lim_{x \to 0} \frac{x - \tan x}{x^3}.$$