King Fahd University of Petroleum and Minerals
Department of Mathematics and Statistics
Math 101 (161) Sec 05 - Quiz 6

Name: ID: Serial No.:

1. Find $\lim_{x\to 0}\left[\dfrac{1}{x(x+1)}-\dfrac{\ln(1+x)}{x^2}\right]$

2. Find the slant asymptote(s) of the graph of the function $f(x)=\dfrac{x^4-x^3-2x^2}{x^3+x^2+x+1}$

3. The product of two positive real numbers is 4. If the sum of the square of one of the numbers and the square of twice of the other number is minimum, then find the sum of the numbers.

4. Find $\lim_{x \to 0} (1 + \sin x)^{1/x}$

5. A can company wants to make cylindrical cans (with top) that holds $2000\pi cm^3$ of soup. Find the dimensions of the can which requires the least amount of metal. (Hint: $V = \pi r^2 h$)

6. Find the interval(s) where the graph of $f(x) = \dfrac{x+1}{e^x}$ concave up.