MATH 1210-90 Fall 2011
Second Midterm Exam
INSTRUCTOR: H.-PING HUANG

LAST NAME _____________________________
FIRST NAME _____________________________
ID NO. _________________________________

INSTRUCTION: SHOW ALL OF YOUR WORK. MAKE SURE YOUR ANSWERS ARE CLEAR AND LEGIBLE. USE SPECIFIED METHOD TO SOLVE THE QUESTION. IT IS NOT NECESSARY TO SIMPLIFY YOUR FINAL ANSWERS.

PROBLEM 1  20 ______
PROBLEM 2  20 ______
PROBLEM 3  20 ______
PROBLEM 4  20 ______
PROBLEM 5  20 ______
TOTAL  100 ______
PROBLEM 1

(20 pt) Find the following values.

(a) \( \lim_{h \to 0} \frac{(5 + h)^2 - 25}{h} \)

(b) \( \lim_{x \to 4} \frac{\frac{2}{x} - \frac{2}{4}}{x - 4} \)
PROBLEM 2

(20 pt) Let 

\[ f(x) = (x + 6)(x^2 - 4). \]

Find \( f''(x) \). For what value of \( x \) is \( f''(x) = 0? \)
PROBLEM 3

(20 pt) Let \( f(x) = (\cos 8x + 9)^{10} \). Find \( f'(x) \).
PROBLEM 4

(20 pt) Suppose you need good approximations to \(\sqrt{4.1}\) and \(\sqrt{8.8}\), but your calculator has died. What might you do?
PROBLEM 5

(20 pt) Find the equation of the tangent line to the curve

\[ y^3 - xy^2 + \cos xy = 2 \]

at the point \((0, 1)\).