Mathematics 211, Lecture 2 **Name:** _____
Instructor: L. Maxim **TA's Name:** _____

PRACTICE EXAM II

Do all five of the following problems. Show all your work, and write neatly.
Answers without full justification will only receive partial credit.
Use of books, notes, phones or calculators during the exam is NOT allowed.

No.	Points		Score
1	15		
2	15		
3	25		
4	20		
5	25		
	100	TOTAL POINTS	

Problem I. (15 points)
A baker estimates that it costs

$$C(q) = 0.01q^2 + 2q + 250$$

dollars each day to bake q loaves of bread. How many loaves should be baked daily in order to minimize the average cost?

Problem II. (15 points)
Find the slope of the curve with equation

$$y = \ln(x + 2y)$$

at the point $(1, 0)$.

Problem III. (25 points)
A street light is mounted at the top of a 15-ft-tall pole. A man 6 ft tall walks away from the pole with a speed of 5 ft/s along a straight path. How fast is the tip of his shadow moving when he is 40 ft from the pole?

Problem IV. (20 points)
Find the absolute maximum and absolute minimum values of

$$f(x) = \frac{x}{x^2 + 4}$$

on the interval $[0, 3]$.

Problem V. (25 points)
Sketch the graph of the function

$$f(x) = \frac{x^2 - 4}{x^2 - 2x}$$

by first considering the domain, intervals of increase and decrease, local extreme points, concavity and inflection points, and end behaviour, including any vertical or horizontal asymptotes.