

Math 220–Final Exam Outline

Location/Time: Usual room, 151 Everitt, 1:30-4:30 p.m. Wednesday, December 17, 2008

Identification: Student ID required.

No final accepted without proof of ID!

Instructions. No calculators, notes, text or phones during the exam. You may bring something to drink during the exam.

Broad Outline: 16 questions, 4 similar to ones for each of the exams plus 4 additional questions.

Points: 160 points total, no curve, 90 points taken directly from the suggested homework.

- | | |
|--|---------------------------------------|
| 1. (12) <u>Short answer.</u> | 9. (8) <u>L'Hôpital's Rule.</u> |
| 2. (10) <u>Definition of Limit.</u> | 10. (10) <u>Graph sketching.</u> |
| 3. (10) <u>Definition of Derivative.</u> | 11. (10) <u>Optimization.</u> |
| 4. (8) <u>Limit Word Problem.</u> | 12. (10) <u>Riemann Sums.</u> |
| 5. (18) <u>Derivative Rules.</u> | 13. (7) <u>Substitution.</u> |
| 6. (6) <u>Logarithmic derivatives.</u> | 14. (10) <u>Volume by slicing</u> |
| 7. (6) <u>Implicit differentiation.</u> | 15. (10) <u>Volume of revolution.</u> |
| 8. (10) <u>Related Rates</u> | 16. (15) <u>Fundamental Theorem</u> |
-

16. 15 points

Sketch a proof that if f is continuous on $[a, b]$ then

$$\frac{d}{dx} \left(\int_a^x f(t) dt \right) = f(x)$$

on (a, b) (be sure to use the definition of the derivative, the Intermediate Value Theorem and the Extreme Value Theorem in your solution).

Remember: You must pass the final to pass this class. Good luck!