

Outline and Suggested Review Problems for Final Exam

Applied Calculus II, MA 120

The following is an outline of important topics we have covered during the course of the term. The numbers in parentheses next to each topic refer to sections in the text where this topic can be found.

- I. Applications of Derivatives
 - a. Implicit differentiation (6.4)
 - b. Related rates (6.5)
 - c. Linear approximation (6.6)
 - d. Trigonometric functions (13.1, 13.2)
 - i. Definitions of the trig functions and their derivatives
 - e. Finding the equation of a tangent line (4.1, 6.4, 13.2)
- II. Indefinite Integrals and Antiderivatives
 - a. Power rule and exponential functions (7.1)
 - b. Trigonometric functions (13.3)
- III. Definite Integrals
 - a. The definition of the definite integral as the limit of Riemann sums (7.3)
 - b. Fundamental Theorem of Calculus (7.4)
- IV. Techniques of Integration
 - a. Substitution (7.2, 13.3)
 - b. Integration by parts (8.1, 13.3)
 - c. Numerical integration (7.6)
 - i. Left and right hand rectangles, Trapezoidal rule, Simpson's rule
- V. Applications of Integration
 - a. Areas (7.5)
 - i. Positive and negative areas
 - ii. Areas between two curves
 - b. Average value (8.2)
 - c. Volume of solids of rotations (8.2)
 - d. Improper integrals (8.4)
- VI. Infinite Series
 - a. Geometric sums (12.1) and geometric series (12.4)
 - b. Ratio test
 - c. Taylor polynomials (12.3) and Taylor series (12.5)
 - d. L'Hopital's Rule (12.7)

When studying for the exam, good sources of problems include: quizzes and exams, examples from your class notes, and textbook problems assigned on MyMathLab. Each section of the text also contains many useful examples with full solutions. Finally, the Chapter Review sections at the end of each chapter are an excellent source of problems. In particular, I would recommend the following:

Chapter 6 Review: 21, 23, 25, 29, 30, 33, 35, 37

Sect 6.6: 11, 13

Chapter 7 Review: 21, 23, 25, 27, 30, 31, 33, 35, 42b, 49, 51, 53, 59, 62, 63, 66, 67, 68, 71, 72

Sect 7.4: 33, 37, 41

Chapter 8 Review: 15, 16, 17, 19, 27, 28, 30, 35, 37, 39, 41

Chapter 12 Review: 1, 4 – 10, 13, 17, 19, 21, 25, 29, 33, 35, 37, 39, 41, 45, 47, 49, 51, 57, 59
Chapter 13 Review: 49, 51, 55, 57, 59, 63, 71, 73, 75, 76, 81, 83, 85, 91
Sect 13.2: 29, 31
Sect 13.3: 25, 27, 39, 41