

Review Outline and Plan of Study Attack for the Final Exam

Math 106–D. Benedetto

Appendix D: Trigonometry Review including Related Rates

Chapter 4: Integrals

- Areas and Riemann Sums
- Fundamental Theorem of Calculus, Parts I and II
- Integration: definite and indefinite integrals, including absolute values
- Position, Velocity, Acceleration relationships
- Displacement, Total Distance
- Integration by Substitution, for both definite and indefinite integrals

Chapter 5: Applications of Integration

- Area Between Curves
- Volumes of Revolution: Disc and/or Washer methods

Chapter 6: Exponential and Logarithmic Functions

- Exponential and Natural Logarithm Functions, $y = e^x$ and $y = \ln x$.
 - Graphs and Properties
 - Limits
 - Derivatives and Tangent Lines
 - Integrals
 - Logarithmic Differentiation
 - Implicit Differentiation
 - Max-Min Problems
 - Curve Sketching
 - Area between Curves
 - Volumes of Revolution
 - ~~Exponential Growth and Decay~~ (Not Spring 2022)

Plan of action:

- **Suggested Schedule** starting Wednesday May 11th
 - **Wednesday May 11th:** Trigonometry and Calculus and **Review Exam #1**
 - **Thursday May 12th:** Chapter 4 Limit Definition of Definite Integral
 - **Friday May 13th:** Chapter 4, FTC (Part I and II), u -substitution,
 - **Saturday May 14th:** Position/Velocity, Total Distance & **Review Exam #2**
 - **Sunday May 15th:** Run a Practice Exam
 - **Monday May 16th:** Area between Curves and Volumes of Revolution
 - **Tuesday May 17th:** Exponentials and Logs and **Review Exam #3**
 - **Wednesday May 18th:** Finish last Practice Exam and **Review!**
 - **Thursday May 19th:** **Final Exam 2–5:00 pm**, SCCE E210
- Approach studying for the final one day at a time. I am suggesting that you all study a small chunk of this material each day for the entire week before the final. This way you will not be overwhelmed. You can also come to my office hours.
- The good news is that in recent weeks we have layered all the functions we know into integration techniques. However, we have not seen related rates for trigonometry recently. Refresh your memory on those seemingly more independent, early, concepts.
- Pick a few problems from each section and try them, **without** looking at the answers first. For each exam, we had a review packet, practice exam, and actual exam. If you no longer have them, they, along with their answer keys, are posted on-line on our class webpage.

<https://dbenedetto.people.amherst.edu/math106/>

- Study the *approach* to solving each type of problem, as well as fine tune the technical skills needed. I am more interested in the process of problem solving than the numerical final answer. Justify your solutions carefully and precisely.
- Complete the practice final exams.
- **Know when my office hours are.** Otherwise, make an appointment.