

## Review Outline and Plan of Study Attack for the Final Exam

Math 106–D. Benedetto

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### Appendix D: Trigonometry Review including Related Rates

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### Chapter 4: Integrals

- Areas and Limit Definition of the Integral (using 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

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### Chapter 5: Applications of Integration

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

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### 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

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## Plan of action:

- Suggested Schedule starting Friday May 2nd
  - **Friday May 2nd:** Trigonometry and Calculus and **Review Exam #1**
  - **Saturday May 3rd:** Chapter 4 Limit Definition of Definite Integral
  - **Sunday May 4th:** Chapter 4, FTC (Part I and II), *u*-substitution,
  - **Monday May 5th:** Position/Velocity, Total Distance and **Review Exam #2**
  - **Tuesday May 6th:** Area between Curves and Volumes of Revolution.  
**Run Practice Final(s) Exam**
  - **Wednesday May 7th:** Exponentials and Logs and **Review Exam #3**
  - **Thursday May 8th:** **Run Practice Final Exam** and **Review!**
  - **FRIDAY May 9th:** **FINAL EXAM 9:00 am–12:00 noon**, Beneski 107
- 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.**