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 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 Sunday April 29th
  - **Sunday April 29th:** Trigonometry and Calculus and **Review Exam** #1
  - **Monday April 30th:** Chapter 4 Limit Definition of Definite Integral
  - **Tuesday May 1st:** Chapter 4, FTC, u-substitution,
  - **Wednesday May 2nd:** position/velocity, Total Distance and **Review Exam** #2
  - **Thursday May 3rd:** Run a Practice Exam
  - **Friday May 4th:** Sections 5.1 and 5.2
  - **Saturday May 5th:** Sections 6.2-6.5 and **Review Exam** #3
  - **Sunday May 6th:** Finish last Practice Exam and **Review!**
  - **Monday May 7th: Final Exam 2–5:00 pm**, SMUDD 207

- 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.