Review Outline and Plan of Study Attack for the Final Exam

Math 105–D. Benedetto

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Chapter 1: Functions and Limits

- Functions, piece-wise defined function, composition of functions
- Limits
- Continuity

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Chapter 2: Derivatives

- Limit Definition of the Derivative
- Differentiation Rules: Product, Quotient, and Chain Rules
- Implicit Differentiation
- Tangent Lines
- Falling Body Problems
- Related Rates

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Chapter 3: Applications of Differentiation

- Extreme Values (Maximum or minumum values), Closed Interval Method
- Curve Sketching: relating a function's derivative information to the function's graph. Limits at $\pm\infty$ (horizontal asymptotes), vertical asymptotes, domain, etc.
- Optimization/Max-Min Problems

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Note: Optimization Problems are the only problems not yet tested on a midterm exam.

Plan of action:

- **Suggested Schedule** starting Tuesday December 10th
  - **Tueday December 10th:** Chapter 1, Functions and (piece-wise) Graphing
  - **Wednesday December 11th:** Limits and Continuity and **Review Exam** #1
  - **Thursday December 12th:** Chapter 2, Derivative Limit Definition and Rules
  - **Friday December 13th:** Implicit Diff. and Related Rates and **Review Exam** #2
  - **Saturday December 14th:** Chapter 3, Curve Sketching and Max-Min Problems
  - **Sunday December 15th: Review Exam** #3 and Practice Exam, **Review!**
  - **Monday December 16th: Final Exam 9–12:00 am**, BEBU 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 the Calculus we've seen has built on previous ideas, so we've been bumping into natural ways of reviewing... for instance, we use the chain rule all the time in our recent studies of say applications of the derivative but you should still go back and review that piece regardless. I have tried to keep reminding you of old familiar ideas, but some ideas, like limits have not been used in a while. Refresh your memory on those seemingly more independent concepts.
- Keep straight the two different approaches for Related Rates and Optimization problems
- Go back and look at the previous Review Packets of Problems. If you no longer have them, they, along with their answer keys, are posted on-line on our class webpage.

  `http://www.cs.amherst.edu/~danielle/math105/`

- Pick a few problems from each section and try them, **without** looking at the answers first. If you get them all right, move onto the next section. There is no need to make up more study problems, between all of my review packets, worksheets homework problems, or class notes, we have found enough problems.
- 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 final answer.
- Review our previous 3 exams.
- **Know when my office hours are.** Otherwise, make an appointment.