

Exam 3 Review Sheet Calc 1 7/19/2005

Format: 10 problems with generally ascending difficulty, plus an extra credit opportunity.

Prerequisites: The exam is comprehensive over everything since kindergarten. Although there won't be entire questions devoted to material from chapter 1 or anything prior to that, this material will be necessary for stages of most problems on the exam. Computing derivatives will of course play a role in many problems.

Content: The exam will cover §4.1 through §4.10.

- ▶ Understand how derivatives relate to the shapes of curves, including aspects like slope, concavity, critical points, inflection points, and non-differentiable points.
- ▶ Be able to do standard optimization problems, both on bounded and unbounded intervals.
- ▶ Know when and how to use L'Hôpital's Rule.
- ▶ Be able to model typical situations and optimize the functions involved.
- ▶ Be able to use Newton's Method, know what to use it for, and understand what can go wrong with it.
- ▶ Know how to find the general antiderivatives of standard functions like polynomials, e^x , $\sin x$, and $\cos x$.
- ▶ Understand the basic connection between derivatives and antiderivatives.

Grading: Each problem is worth 10 points.

- ▶ 10 points indicates complete, accurate, and adequately justified completion of a problem.
- ▶ Isolated mistakes within an otherwise valid solution generally cost about a third of the points possible (3 to 4 points out of 10).
- ▶ Even if you can't complete a problem, make an effort to indicate to me how much you know so I can gauge credit accordingly.
- ▶ Pay attention to what's asked for: You don't need to waste time working out answers if you're only asked to set them up. Providing a decimal approximation when an exact value is requested, or vice versa, costs you points. Pay attention to the difference.

Resources: You are welcome to use a calculator of your choice, and scratch paper will be provided.