

Exam #2 Study Guide

Math 1080

Exam #2 is Wednesday 10/14/09. The exam will be over sections 1.7, 1.8, 2.1 – 2.5. There will be two parts to the exam. Part one of the exam will be with a calculator and part two will be without a calculator. So, **don't forget your calculator!** The exam will cover the following sections and topics:

- 1.7 Be able to use the chain rule and the chain rule combined with other rules (such as the product rule and quotient rule) to find the derivative of a function.
- 1.8 Be able to find second derivatives, third derivatives, fourth derivatives, etc. Know the different notation that we use for each of these higher order derivatives.
- 2.1 Be able to use $f'(x)$ to determine where the graph of $y = f(x)$ is increasing and where it is decreasing. Be able to find the critical values of a function and be able to find the relative extrema by using the first-derivative test. Be able to use this information to provide a sketch of the graph of $y = f(x)$.
- 2.2 Be able to use $f''(x)$ to find inflection points and find intervals where the graph of $y = f(x)$ is concave up and where it is concave down. Be able to use the second derivative test to find the relative extrema of $y = f(x)$. Be able to use this information to provide a sketch of the graph of $y = f(x)$.
- 2.3 Given a rational function, be able to find any vertical and horizontal asymptotes and holes in the graph. Be able to provide a sketch of the graph of a rational function identifying any asymptotes as broken lines and finding the x -intercepts and y -intercept to add more detail to the graph.
- 2.4 Be able to find absolute maximum and absolute minimum values of a continuous function defined over a closed interval $[a,b]$.
- 2.5 Be able to solve max-min problems such as maximizing area or volume, maximizing Total Revenue, maximizing Total Profit, or minimizing Total Cost.

The exam will contain problems that are similar to (but not identical to) problems that you have done on the homework. A good way for you to review for the exam is to go back over the homework problems (including the odd homework problems) from written homework assignments 4, 5, 6, and 7.

Another way for you to practice for the exam is to do the chapter review exercises. The answers to all of these problems are provided in the back of the text. Note, these are practice problems and you do not turn them in.

Chapter 1 Review Exercises (page 190): #9-14, 44-49, 53.

Chapter 2 Review Exercises (page 297): #1-7, 9, 10, 14, 15, 21, 22, 23, 24, 29, 30, 33, 34, 35, 40, 42.

* Note on chapter 2 review exercises: You should use calculus to find where a function is increasing or decreasing. You should use calculus to find the critical points and then you should use either the first derivative test or second derivative test to find the relative extrema. You should be able to use the second derivative to determine where the graph of a function is concave up or concave down, and where any inflection points are. For simple functions you should be able to do all of this without the aid of a calculator.

If you want even more review then try the Chapter Practice Tests. Again, the answers are in the back of the text and these problems are for practice. You do not turn these in.

Chapter 1 Practice Test (page 193): #34 – 37, 41.

Chapter 2 Practice Test (page 299): #1, 6, 9, 10, 11, 14, 16, 22, 23.