Review for First Exam

The first exam will cover sections 6.2, 6.4, 7.1, and 7.2 of the text. (The relevant assignments are assignments 1 through 3.)

There will be one or two questions in which I ask you to state a definition or prove a theorem. Here is a list of the definitions, statements, and proofs which I might ask for, with references to where you can find them in the text. Sometimes I gave a proof in class which is different from the one in the class; you can use whichever one you prefer.

- Be able to state the Mean Value Theorem (6.2.4). I will not ask for a proof.
- Be able to prove that if the derivative of a function is zero on an interval, then the function is constant on that interval (6.2.5).
- Be able to state Taylor's theorem (6.4.1). I will not ask for a proof.
- Know the definition of "Riemann integrable function" (7.1.1) and "Riemann integral" (second paragraph following 7.1.1).
- Be able to prove the uniqueness of the Riemann integral (7.1.2).
- Be able to state the properties of Riemann integrable functions in Theorem 7.1.4 (about sums and constant multiples of functions, and inequalities between functions). I will not ask for proofs.
- Be able to state the Cauchy criterion (7.2.1). I will not ask for a proof.

The rest of the exam will consist of questions similar to the homework problems. Here is a guide to the sections in the text that will be covered on the exam. Besides re-reading these sections and the assigned homework problems carefully, it might be a good idea to find homework problems at the end of the section which resemble those already assigned, or resemble the examples in the text, and spend at least a little time trying to do them.

- Section 6.2: you should be familiar with the material from the beginning of the section through the remark in the middle of page 171. You should also be familiar with the examples in 6.2.10 on page 173. Try to be comfortable with the proofs and the ideas behind them.
  You can skip the remainder of the section (6.2.8, 6.2.9, 6.2.11, 6.2.12, and 6.2.13).
- Section 6.3: this section (on L'hopital's rule) is not covered on the exam.
- Section 6.4: You should be familiar with the material from the beginning of the section through Example 6.4.3 on page 186. You can skip the remainder of the section (from the subsection titled "Relative Extrema" through the end of the section).
- Section 7.1: We pretty much covered this entire section. You can skip Theorem 7.1.5 and Example 7.1.6. (We'll come back to Theorem 7.1.5 later in the class.)
- Section 7.2: You should read from the beginning of the section through Theorem 7.2.6. Not all of this material will be covered explicitly on the exam, but I think it will help to know it anyway.