# Review for Third Exam

The third exam will cover sections 5.1, 5.2, 5.3, 6.1, and 6.2 of the text. (The relevant assignments are assignments 20 through 26.)

There will be one or two questions in which I ask you to state a definition or to prove a theorem, taken from the following list.

- Definition of continuity (5.1.1).
- Know the sequential criterion for continuity (5.1.3) — you do not need to know the proof.
- Be able to prove that the composition of continuous functions is continuous (5.2.6).
- Know the statement of the Extreme Value Theorem (definition (5.3.3) and Theorem (5.3.4) of the text). You do not need to know the proof.
- Definition of derivative (6.1.1).
- Be able to prove that if a function is differentiable at a point, then it is continuous at that point (6.1.2).
- Be able to prove the product rule for derivatives (6.1.3).
- Know the statement of the Mean Value Theorem (6.2.4). You do not need to know the proof.

Here is a review guide for the sections in the text covered on the exam.

- Sections 5.1 and 5.2: you should read these sections in their entirety.
- Section 5.3: read from the beginning of the section through the end of the proof of the Maximum-Minimum theorem (5.3.4). You can skip the rest of the section.
- Section 6.2: Read from the beginning of the section up to the beginning of the subsection titled "The Chain Rule". You can skip the material on the chain rule and on inverse functions, except that it would probably help to re-read the statement (not the proof) of the chain rule (6.1.6).
- Section 6.3: I'm doing the proof of Theorems 6.2.1, 6.2.3, and 6.2.4 on the last day of class, but you don't need to worry about these proofs for the test. Instead, you should remember the statement of the Mean Value Theorem 6.2.4, and you should be able to use it to do problems like exercises 6.2.7 or 6.2.13. Re-reading the proofs of Theorem 6.2.5 and 6.2.7, and the Examples in 6.2.10 will be helpful. You can skip Theorem 6.2.8, Examples 6.2.9, and the subsection titled "The Intermediate Property of Derivatives".