There are various ways to begin the study of the “Theory of Calculus”, but they all begin by mastering the notion of “limit.” Ross chooses to introduce this through the study of sequences and their limits. We agree with this strategy — it is surely the most intuitively satisfying and the most benign for the beginner. So before our first exam (on February 3) we want to review the idea of a sequence and learn exactly what limits mean in that context. Thus, in the key sections §7 and §8 we will learn how to prove that a sequence has a particular limit, when it does. In Section §9 we will then consider several “Limit Theorems” that will often greatly simplify the task of computing limits. Many of these theorems you first saw in elementary calculus, but now we will actually be able to prove them! Finally in §10 we will address the serious question of trying to decide when a given sequence actually converges even though we may not be able to determine its limit. This material will take us through what we will need to know for that first Exam.

Your specific assignment then is to study Sections 7, 8, 9, and 10 from the Ross text, and then to practice with the following exercises:

[Note: Several exercises below are listed in parentheses. These are not to be turned in for grading. However, you should do them all, but you need not write them up formally. They are integral parts of the course, appropriate for class discussion, and certainly will be assumed on the tests!]

§8 (8.1). 8.2ace. (8.3), 8.4, 8.5, (8.9, 8.10);
§10 (10.1), 10.2, 10.5, (10.6), 10.7, 10.10.

[Note] Do not short change Exercises 8.9 and 8.10. These are VERY IMPORTANT, but unfortunately they do take a while to write up. Exercise 9.12 deals with another important matter that we will encounter again later. It, too, is not easy to write up, but you really should spend some time convincing yourself that it must be as claimed.