A Note to the Student

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What follows here is the "Note to the Student" from the First Edition. I don't know why I dropped it—I think it should have been a part of every Edition.

This book was written to be read. Now I am under no illusions that this text will compete with the latest popular novel for interest and thrilling narrative. But I have tried very hard to write a book on mathematics that could be read by the students. So do not simply buy the book, work the exercises, and sell the book back to the bookstore at the end of the term. Read the text, think about what you have read, and ask your instructor questions about the things that you do not understand.

Numerical methods and analysis is a very different area of mathematics, certainly different from what students have seen in their previous courses. It is not harder, but the differentness of the material makes it seem harder. We worry about different issues than in other mathematics classes. In a calculus course you are typically asked to compute the derivative or antiderivative of a given function, or to solve some equation for a particular unknown. The task is clearly defined, with a very concrete notion of "the right answer." Here, we are concerned with computing approximations, and this involves a slightly different kind of thinking. We have to understand what we are approximating well enough to construct a reasonable approximation, and we have to be able to think clearly and logically enough to analyze the accuracy and performance of that approximation. One former student has characterized this course material as "rigorously imprecise" or "approximately precise." Both are appropriate descriptions. Rote memorization of procedures is not of use here; it is vital in this course that the student learn the underlying concepts.