

Preface

This is the second in a series of tutoring books,¹ a text in probability, written for students in mathematics and applied areas such as engineering, physics, chemistry, economics, computer science, and statistics. The style is unlike that of the usual mathematics text, and I'd like to describe the approach and explain the rationale behind it.

Mathematicians and consumers of mathematics (such as engineers) seem to disagree as to what mathematics actually is. To a mathematician, it's important to distinguish between rigor and informal thinking. To an engineer, intuitive thinking, geometric reasoning, and physical argument are all valid if they illuminate a problem, and a formal proof is often unnecessary or counterproductive.

The typical mathematics text includes applications and examples, but its dominant feature is *formalism*. Theorems and definitions are stated precisely, and many results are proved at a level of rigor that is acceptable to a working mathematician. This is bad. After teaching many undergraduates, most quite competent and some, in fact, blindingly bright, it seems entirely clear to me that most are not ready for an abstract presentation. At best, they will have a classroom teacher who can translate the formalism into ordinary English ("what this really means is . . ."). At worst, they will give up. Most will simply learn to read around the abstractions so that the textbook at least becomes useful as a source of examples.

This text uses informal language and thinking whenever possible. This is the appropriate approach even for mathematics majors: Rigorous probability

¹The first is *The Calculus Tutoring Book* by Carol Ash and Robert Ash (New York: IEEE Press, 1986).

