Preface to Third Edition:  
Part 2

The second half of this third edition of Advanced Modern Algebra has Part 1 as prerequisite. This is not to say that everything there must be completely mastered, but the reader should be familiar with what is there and should not be uncomfortable upon seeing the words category, functor, module, or Zorn.

The format of Part 2 is standard, but there are interactions between the different chapters. For example, group extensions and factor sets are discussed in the chapter on groups as well as in the chapter on homology. I am reminded of my experience as an aspiring graduate student. In order to qualify for an advanced degree, we were required to take a battery of written exams, one in each of algebra, analysis, geometry, and topology. At the time, I felt that each exam was limited to its own area, but as I was wrestling with an algebra problem, the only way I could see to solve it was to use a compactness argument. I was uncomfortable: compactness arguments belong in the topology exam, not in the algebra exam! Of course, I was naive. The boundaries of areas dividing mathematics are artificial; they really don’t describe what is being studied but how it is being studied. It is a question of attitude and emphasis. Doesn’t every area of mathematics study polynomials? But algebraists and analysts view them from different perspectives. After all, mathematics really is one vast subject, and all its parts and emphases are related.

A word about references in the text. If I mention Theorem C-1.2 or Exercise C-1.27 on page 19, then these are names in Part 2 of the third edition. References to names in Part 1 will have the prefix A- or B- and will say, for example, Theorem A-1.2 in Part 1 or Exercise B-1.27 on page 288 in Part 1. In an exercise set, an asterisk before an exercise, say, *C-1.26, means that this exercise is mentioned elsewhere in the text, usually in a proof.

Thanks goes to Ilya Kapovich, Victoria Corkery, Vincenzo Acciaro, and Stephen Ullom.