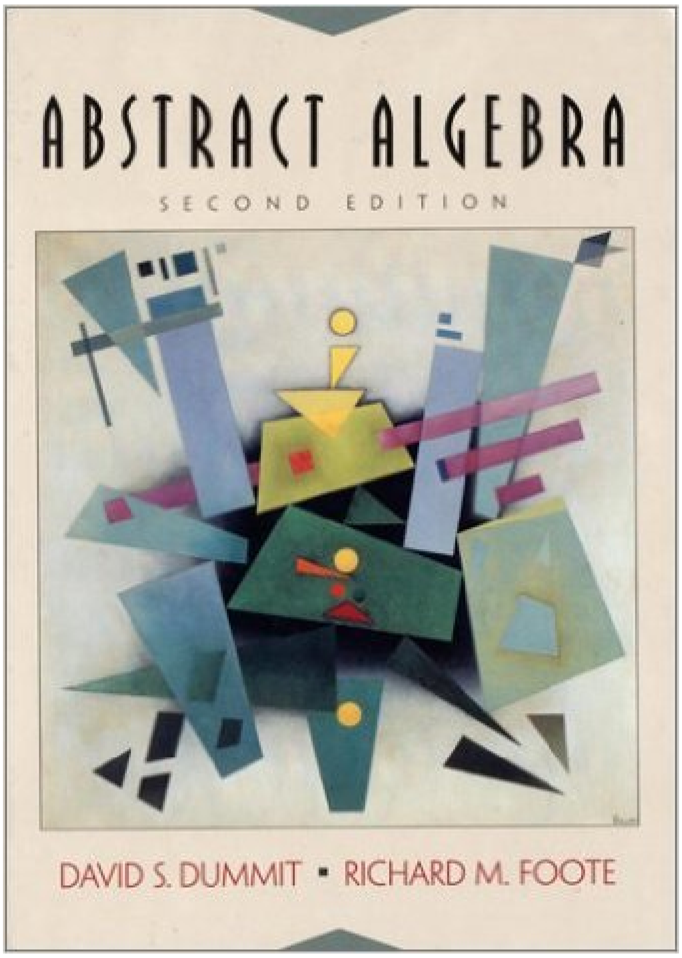
Abstract Algebra, 2nd Edition



Synopsis

Covering such material as tensor products, commutative rings, algebraic number theory and introductory algebraic geometry, this work includes exercises ranging in scope from routine to fairly sophisticated, including exploration of important theoretical or computational techniques.

Book Information

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Customer Reviews

Most of the reviews have been positive, and basically explain the strengths of the book, but I thought some would appreciate hearing what someone, like me, who has gone through most of the material in the book over the last three and half years, would say.This is the only book I bought as an undergraduate that I still look at today. All my other undergrad texts are either stored away somewhere or gather dust on my bookshelf. The reason is simple: Dummit and Foote has stocked in one book almost all the basic algebra that is required for my study of 3-manifold theory. I suspect this is true of other fields also. By "basic algebra" I mean the key ideas and examples that are used in many different areas of mathematics.Just recently, I needed to pick up some algebraic geometry in order to understand SL(2, C) character varieties. As usual, I went to my Dummit and Foote and found what I needed (for the most part). And also as usual, I will need to supplement that knowledge with some more advanced books.A couple things about this book annoy me though: 1) the price -- however, I have certainly gotten my money’s worth out of it over the years, so I can’t really complain 2) Initially when I first got the book, the wealth of material in the book appeared intimidating and esoteric to me; however, nowadays I would say there isn’t *enough* in this book. Oftentimes it seems that I get just a taste before the discussion of a topic ends. On the other hand, I am realistic, so I realize that this book is not meant to be encyclopedic but to introduce the reader to the more advanced topics.I've yet to see another book that carries all the topics of this one, and remains fairly reader-friendly (as this one does).

This book arose from the lecture notes of Dave Dummit and Richard Foote, both at the University of Vermont. I first encountered this book in Dummit's own graduate algebra I-II class and was swept away by the clarity in contrast with my previous classes. Both authors are excellent teachers, and their text is equally good. Really slick development of group and ring theory, in an intuitive manner, constantly working through examples with symmetric and dihedral groups. Also includes high-level algebra suited for topics courses. I highly recommend this text.

For a number of reasons this may not be the best book for undergraduate self-study:1. No answers to problems (though I think this should be much less a problem for anyone doing abstract algebra at any level, I'll stay off the soapbox)2. This book contains a lot of information beyond the basic (undergraduate) essentials, and as this extra information is quite densely packed into each part of the book, it might be tough to pick out the main points3. The exercises stay (for the most part) at a relatively uniform/low level of difficulty, but the proof/calculation ratio is kind of high (still resisting soapbox-related urges ...)I'm sure there are others; many have been mentioned in previous reviews.For graduate-level self-study, however, this book is a dream. As mentioned above, it is overflowing with information at every turn, which keeps the stuff that's review interesting and the stuff that's new accessible (at this level students should have the toolbox to deal with examples and such that draw from analysis, topology, or what-have-you). It has chapters on commutative algebra, homology theory, and representation theory (of finite groups), and appendices on Zorn's lemma and category theory. The conversational style isn't distracting (a big issue for me), possibly because of the exceptional organization for a book covering so much. Finally, the authors have succeeded tremendously in presenting everything with a view toward its ultimate use by the reader further along into "the great mathematical beyond" (I apologize for using this phrase).One complaint: I can't seem to find a bibliography...

This book tries to accomodate both advanced undergraduates and beginning graduates. It would be a good challenge for undergrads to look at, and it covers most of the important topics you would see in a first-year graduate class. It should be readable for graduate students (compared to, say....Lang). Lang, of course covers far more material, but then again,...this is much more readable.

One thing which would be a minor complaint is that several central, important topics are relegated to exercises. This is fine for a lot of things you want to introduce, but certain concepts are so fundamental (such as inverse and direct limits, p-adics, trace and norm of field extensions, Hilbert’s theorem 90, etc.) that need to be presented within the text. Of course, it could be just my viewpoint that these are such important things in the first place. Overall, it’s very readable and I got a lot out of it, even if I don’t use it as a regular reference. I can’t help but comment on one of the previous reviewers criticism that the authors make a "mistake" in reference to subrings. The mistake is entirely the reviewer’s, who failed to read closely. In this book, a "ring" is not required to have identity, so 2Z (or nZ) is in fact a subring of Z, and the claim about subrings is true. The reviewer assumed without reading closely that identity was required. Just felt like vindicating the authors on the point!

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