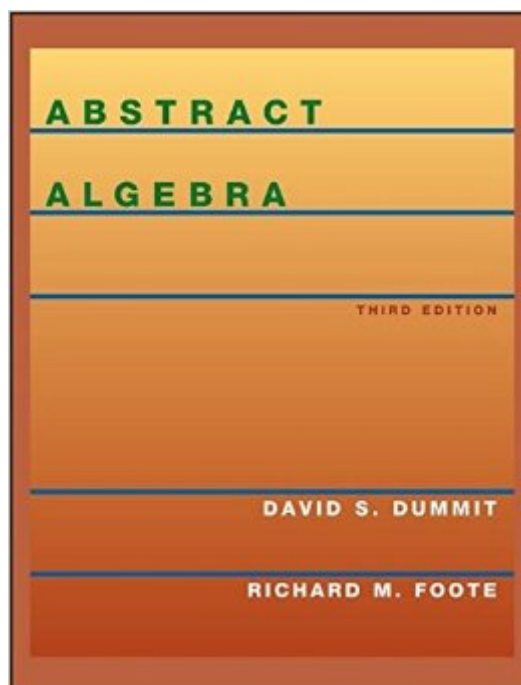


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Abstract Algebra, 3rd Edition



Synopsis

Widely acclaimed algebra text. This book is designed to give the reader insight into the power and beauty that accrues from a rich interplay between different areas of mathematics. The book carefully develops the theory of different algebraic structures, beginning from basic definitions to some in-depth results, using numerous examples and exercises to aid the reader's understanding. In this way, readers gain an appreciation for how mathematical structures and their interplay lead to powerful results and insights in a number of different settings. * The emphasis throughout has been to motivate the introduction and development of important algebraic concepts using as many examples as possible.

Book Information

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Customer Reviews

Dummit and Foote contains just about everything an undergraduate ought to know about abstract algebra. In addition, it is written in a more user-friendly, down-to-earth fashion than, say, Lang's Algebra is. The pro's have been discussed in other reviews and include: clear development of group, ring, and field theory; tons of exercises at the end of every chapter; numerous examples scattered around the text; sylow theorems (for group theory, imo, it's important, and not every algebra book does sylow stuff!); great introduction to exact sequences (useful if the reader is going into algebraic topology anytime soon. ugh!); galois theory is pretty clearly laid out; and, the third section of the book has some neat topics the reader can check out (which are, I think, commutative algebra, homological algebra, and representation theory introductions, as well as a small section on category theory at the very end). The con's of D+F are the price (it's very expensive!), the binding (it's

horrible!), and some of the sections are much harder than others and D+F doesn't do as well a job at explaining them as in many of the other sections (the tensors section sticks out in my head, and they wait something like 100 pages to explain "tricks" for figuring out the structure of finite groups after explaining some of the sylow stuff (eg., they wait to tell the reader about how to "pin small groups against one-another" and to make use of the sylow $n!$ trick). Also, D+F introduce modules before vector spaces which I have mixed feelings about --- as a student who's already taken an algebra class, I love the "flow" of the lessons; as a student who remembers what it was like to try to imagine what modules "looked like", it makes me cringe to think that they didn't introduce vector spaces first.

This is a superb textbook on algebra that is notable for its extremely clear and well-organized presentation. Development of different sections carefully builds on what went for, and running examples that gradually become more developed (for example, the quaternions as group, then as a ring, then various structural aspects) throughout. The terminology is completely standard, avoiding the temptation that some authors - or perhaps older texts - fall into of using bizarre terminology that is its author's favorite. The whole text has a very uniform, clear, well-architected feel to it: the sections stand on their own to the extent that they can, but also fit solidly into the rest of the presentation. The presentation itself covers many topics which, taken together, make this an invaluable reference, for example group theory includes Burnside's theorem on solvability of certain finite groups (and at least mentions Feit-Thompson); ring theory includes a discussion of Gröbner bases; linear algebra includes symmetric and exterior algebras. A good introduction to algebraic geometry (the Nullstellensatz, localization, and some basic framework) is included. There is a solid introduction to representation theory via group rings and Wedderburn's theorem - an approach which is really more useful for applications than a pure group-theoretic introduction might have been. Despite its broad coverage of topics, the book's development is extremely clear and easy-to-read. Because of the many examples and easy exercises, it is one of the most easy-to-understand texts I have seen. Every new idea is carefully defined and illustrated with multiple examples, proofs are very clear and painstaking.

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