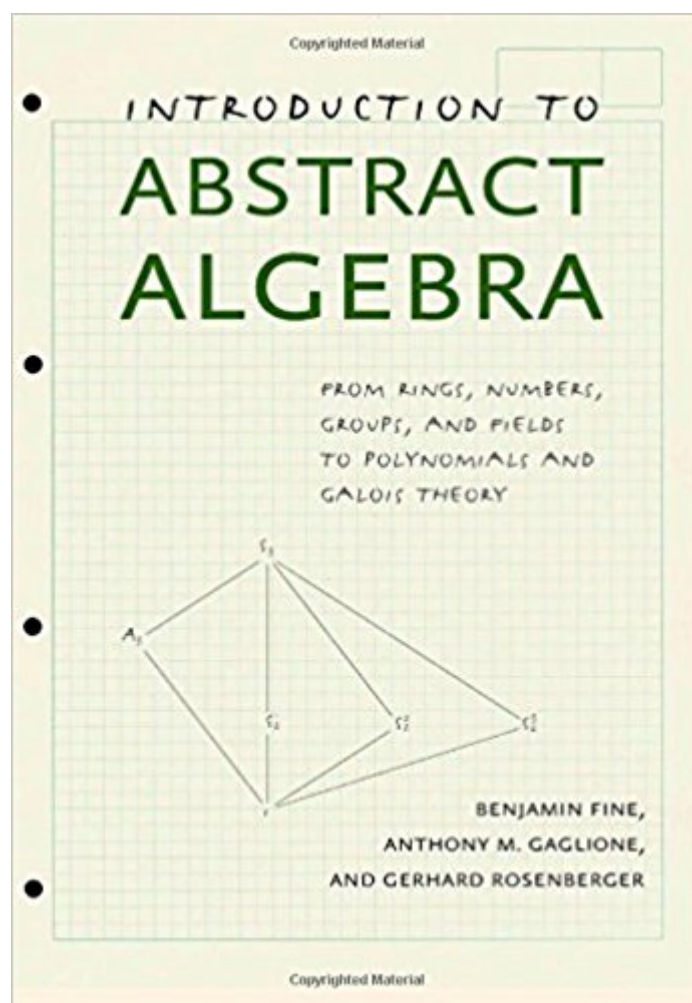


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# Introduction To Abstract Algebra: From Rings, Numbers, Groups, And Fields To Polynomials And Galois Theory



## Synopsis

Introduction to Abstract Algebra presents a breakthrough approach to teaching one of math's most intimidating concepts. Avoiding the pitfalls common in the standard textbooks, Benjamin Fine, Anthony M. Gaglione, and Gerhard Rosenberger set a pace that allows beginner-level students to follow the progression from familiar topics such as rings, numbers, and groups to more difficult concepts. Classroom tested and revised until students achieved consistent, positive results, this textbook is designed to keep students focused as they learn complex topics. Fine, Gaglione, and Rosenberger's clear explanations prevent students from getting lost as they move deeper and deeper into areas such as abelian groups, fields, and Galois theory. This textbook will help bring about the day when abstract algebra no longer creates intense anxiety but instead challenges students to fully grasp the meaning and power of the approach. Topics covered include:

- Rings
- Integral domains
- The fundamental theorem of arithmetic
- Fields
- Groups
- Lagrange's theorem
- Isomorphism theorems for groups
- Fundamental theorem of finite abelian groups
- The simplicity of  $A_n$  for  $n \geq 5$
- Sylow theorems
- The Jordan-Hölder theorem
- Ring isomorphism theorems
- Euclidean domains
- Principal ideal domains
- The fundamental theorem of algebra
- Vector spaces
- Algebras
- Field extensions: algebraic and transcendental
- The fundamental theorem of Galois theory
- The insolvability of the quintic

## Book Information

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## Customer Reviews

This is a tremendously good book, presented in larger type which makes it extremely pleasant to read. I wish this is how all mathematics was taught. As one of my professors once told me, really

students should be learning the deeper picture of mathematics first as it is why everything else in mathematics is. You can do that with a blend of algebraic and geometric/topological emphasis, or a purely algebraic one. Whilst my preferences from a learning perspective are towards the former, I still love this book which takes the purely algebraic approach. In this lovely text by Fine, Gagliione & Rosenberg, nothing is skipped and everything is done (I think) in the right order. Modern/Abstract Algebra and an understanding of Rings, Fields and Group Theory is the true prerequisite for Linear Algebra, but most of the time we learn it in the reverse order, which makes absolutely no sense. Unfortunately we are the inheritors of a decadent educational system which favours 'applications' and 'analysis' and neglects to present the foundations that the applications emerge out of. I found this book at my university's library by chance and fell in love. It fills in all the gaps that lecturers and most other books skip over in the interests of expediency and presents a true picture of the structural beauty of Algebra which, to me, is what Mathematics really boils down to. If I have any criticisms of this book, they are minor. I personally think more illustrations of the concepts would be greatly beneficial, and I think a summary of notation and a reference chart/algebraic summary at the front of the book wouldn't go amiss. I wish the book came in a proper cloth binding (rather than the 'textbook' variety of hardcover) and on slightly less 'pure white' paper stock, too – but as I said, those are minor niggles.

Excellent text. Excellent transaction.

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