

Topics In Algebra Herstein

A classic text and standard reference for a generation, this volume covers all undergraduate algebra topics, including groups, rings, modules, Galois theory, polynomials, linear algebra, and associative algebra. 1985 edition.

Graduate-level coverage of Galois theory, especially development of infinite Galois theory; theory of valuations, prolongation of rank-one valuations, more. Over 200 exercises. Bibliography. "...clear, unsophisticated and direct..." — Math.

This fifth edition of Lang's book covers all the topics traditionally taught in the first-year calculus sequence. Divided into five parts, each section of A FIRST COURSE IN CALCULUS contains examples and applications relating to the topic covered. In addition, the rear of the book contains detailed solutions to a large number of the exercises, allowing them to be used as worked-out examples -- one of the main improvements over previous editions.

A Discovery-Based Approach to Learning about Algebraic Structures Abstract Algebra: Structures and Applications helps students understand the abstraction of modern algebra. It emphasizes the more general concept of an algebraic structure while simultaneously covering applications. The text can be used in a variety of courses, from a one-semester introductory course to a full two-semester sequence. The book presents the core topics of structures in a consistent order: Definition of structure Motivation Examples General properties Important objects Description Subobjects Morphisms Subclasses Quotient objects Action structures Applications The text uses the general concept of an algebraic structure as a unifying principle and introduces other algebraic structures besides the three standard ones (groups, rings, and fields). Examples, exercises, investigative projects, and entire sections illustrate how abstract algebra is applied to areas of science and other branches of mathematics. "Lovett (Wheaton College) takes readers through the variegated landscape of algebra, from elementary modular arithmetic through groups, semigroups, and monoids, past rings and fields and group actions, beyond modules and algebras, to Galois theory, multivariable polynomial rings, and Gröbner bases." Choice Reviewed: Recommended From the Preface: "This book is based on notes prepared for a course at the University of Chicago. The course was intended for nonmajors whose mathematical training was somewhat limited ... Mastery of the material requires nothing beyond algebra and geometry normally covered in high school ... [I]t could be used in courses designed for students who intend to teach mathematics ... We want the reader to see mathematics as a living subject in which new results are constantly being obtained."

Finally a self-contained, one volume, graduate-level algebra text that is readable by the average graduate student and flexible enough to accommodate a wide variety of instructors and course contents. The guiding principle throughout is that the material should be presented as general as possible, consistent with good pedagogy. Therefore it stresses clarity rather than brevity and contains an extraordinarily large number of illustrative exercises.

This book provides a complete abstract algebra course, enabling instructors to select the topics for use in individual classes.

This textbook offers an innovative approach to abstract algebra, based on a unified treatment of similar concepts across different algebraic structures. This makes it possible to express the

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main ideas of algebra more clearly and to avoid unnecessary repetition. The book consists of two parts: The Language of Algebra and Algebra in Action. The unified approach to different algebraic structures is a primary feature of the first part, which discusses the basic notions of algebra at an elementary level. The second part is mathematically more complex, covering topics such as the Sylow theorems, modules over principal ideal domains, and Galois theory. Intended for an undergraduate course or for self-study, the book is written in a readable, conversational style, is rich in examples, and contains over 700 carefully selected exercises. Great book! The author's teaching experience shows in every chapter. --Efim Zelmanov, University of California, San Diego Vinberg has written an algebra book that is excellent, both as a classroom text or for self-study. It is plain that years of teaching abstract algebra have enabled him to say the right thing at the right time. --Irving Kaplansky, MSRI This is a comprehensive text on modern algebra written for advanced undergraduate and basic graduate algebra classes. The book is based on courses taught by the author at the Mechanics and Mathematics Department of Moscow State University and at the Mathematical College of the Independent University of Moscow. The unique feature of the book is that it contains almost no technically difficult proofs. Following his point of view on mathematics, the author tried, whenever possible, to replace calculations and difficult deductions with conceptual proofs and to associate geometric images to algebraic objects. Another important feature is that the book presents most of the topics on several levels, allowing the student to move smoothly from initial acquaintance to thorough study and deeper understanding of the subject. Presented are basic topics in algebra such as algebraic structures, linear algebra, polynomials, groups, as well as more advanced topics like affine and projective spaces, tensor algebra, Galois theory, Lie groups, associative algebras and their representations. Some applications of linear algebra and group theory to physics are discussed. Written with extreme care and supplied with more than 200 exercises and 70 figures, the book is also an excellent text for independent study.

The Second Edition of this classic text maintains the clear exposition, logical organization, and accessible breadth of coverage that have been its hallmarks. It plunges directly into algebraic structures and incorporates an unusually large number of examples to clarify abstract concepts as they arise. Proofs of theorems do more than just prove the stated results; Saracino examines them so readers gain a better impression of where the proofs come from and why they proceed as they do. Most of the exercises range from easy to moderately difficult and ask for understanding of ideas rather than flashes of insight. The new edition introduces five new sections on field extensions and Galois theory, increasing its versatility by making it appropriate for a two-semester as well as a one-semester course.

Solutions of equations in integers is the central problem of number theory and is the focus of this book. The amount of material is suitable for a one-semester course. The author has tried to avoid the ad hoc proofs in favor of unifying ideas that work in many situations. There are exercises at the end of almost every section, so that each new idea or proof receives immediate reinforcement.

This is a gentle introduction to the vocabulary and many of the highlights of elementary group theory. Written in an informal style, the material is divided into short sections, each of which deals with an important result or a new idea. Includes more than 300 exercises and approximately 60 illustrations.

This textbook offers a unique introduction to classical Galois theory through many concrete examples and exercises of varying difficulty (including computer-assisted exercises). In addition to covering standard material, the book explores topics related to classical problems such as Galois' theorem on solvable groups of polynomial equations of prime degrees, Nagell's proof of non-solvability by radicals of quintic equations, Tschirnhausen's transformations, lunes of Hippocrates, and Galois' resolvents. Topics related to open

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conjectures are also discussed, including exercises related to the inverse Galois problem and cyclotomic fields. The author presents proofs of theorems, historical comments and useful references alongside the exercises, providing readers with a well-rounded introduction to the subject and a gateway to further reading. A valuable reference and a rich source of exercises with sample solutions, this book will be useful to both students and lecturers. Its original concept makes it particularly suitable for self-study.

Algebra: Chapter 0 is a self-contained introduction to the main topics of algebra, suitable for a first sequence on the subject at the beginning graduate or upper undergraduate level. The primary distinguishing feature of the book, compared to standard textbooks in algebra, is the early introduction of categories, used as a unifying theme in the presentation of the main topics. A second feature consists of an emphasis on homological algebra: basic notions on complexes are presented as soon as modules have been introduced, and an extensive last chapter on homological algebra can form the basis for a follow-up introductory course on the subject. Approximately 1,000 exercises both provide adequate practice to consolidate the understanding of the main body of the text and offer the opportunity to explore many other topics, including applications to number theory and algebraic geometry. This will allow instructors to adapt the textbook to their specific choice of topics and provide the independent reader with a richer exposure to algebra. Many exercises include substantial hints, and navigation of the topics is facilitated by an extensive index and by hundreds of cross-references.

Accessible but rigorous, this outstanding text encompasses all of the topics covered by a typical course in elementary abstract algebra. Its easy-to-read treatment offers an intuitive approach, featuring informal discussions followed by thematically arranged exercises. This second edition features additional exercises to improve student familiarity with applications. 1990 edition.

Noncommutative Rings provides a cross-section of ideas, techniques, and results that give the reader an idea of that part of algebra which concerns itself with noncommutative rings. In the space of 200 pages, Herstein covers the Jacobson radical, semisimple rings, commutativity theorems, simple algebras, representations of finite groups, polynomial identities, Goldie's theorem, and the Golod–Shafarevitch theorem. Almost every practicing ring theorist has studied portions of this classic monograph.

Basic Algebra and Advanced Algebra systematically develop concepts and tools in algebra that are vital to every mathematician, whether pure or applied, aspiring or established. *Advanced Algebra* includes chapters on modern algebra which treat various topics in commutative and noncommutative algebra and provide introductions to the theory of associative algebras, homological algebras, algebraic number theory, and algebraic geometry. Many examples and hundreds of problems are included, along with hints or complete solutions for most of the problems. Together the two books give the reader a global view of algebra and its role in mathematics as a whole.

This is the eBook of the printed book and may not include any media, website access codes, or print supplements that may come packaged with the bound book. *Algebra, Second Edition*, by Michael Artin, provides comprehensive coverage at the level of an honors-undergraduate or introductory-graduate course. The second edition of this classic text incorporates twenty years of feedback plus the author's own teaching experience. This book discusses concrete topics of algebra in greater detail than others, preparing readers for the more abstract concepts; linear algebra is tightly integrated throughout.

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News about this title: — Author Marty Weissman has been awarded a Guggenheim Fellowship for 2020. (Learn more here.) — Selected as a 2018 CHOICE Outstanding Academic Title — 2018 PROSE Awards Honorable Mention An Illustrated Theory of Numbers gives a comprehensive introduction to number theory, with complete proofs, worked examples, and exercises. Its exposition reflects the most recent scholarship in mathematics and its history. Almost 500 sharp illustrations accompany elegant proofs, from prime decomposition through quadratic reciprocity. Geometric and dynamical arguments provide new insights, and allow for a rigorous approach with less algebraic manipulation. The final chapters contain an extended treatment of binary quadratic forms, using Conway's topograph to solve quadratic Diophantine equations (e.g., Pell's equation) and to study reduction and the finiteness of class numbers. Data visualizations introduce the reader to open questions and cutting-edge results in analytic number theory such as the Riemann hypothesis, boundedness of prime gaps, and the class number 1 problem. Accompanying each chapter, historical notes curate primary sources and secondary scholarship to trace the development of number theory within and outside the Western tradition. Requiring only high school algebra and geometry, this text is recommended for a first course in elementary number theory. It is also suitable for mathematicians seeking a fresh perspective on an ancient subject. New edition includes extensive revisions of the material on finite groups and Galois Theory. New problems added throughout.

Lucid coverage of the major theories of abstract algebra, with helpful illustrations and exercises included throughout. Unabridged, corrected republication of the work originally published 1971. Bibliography. Index. Includes 24 tables and figures.

CONTEMPORARY ABSTRACT ALGEBRA, NINTH EDITION provides a solid introduction to the traditional topics in abstract algebra while conveying to students that it is a contemporary subject used daily by working mathematicians, computer scientists, physicists, and chemists. The text includes numerous figures, tables, photographs, charts, biographies, computer exercises, and suggested readings giving the subject a current feel which makes the content interesting and relevant for students. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

The companion title, Linear Algebra, has sold over 8,000 copies The writing style is very accessible The material can be covered easily in a one-year or one-term course Includes Noah Snyder's proof of the Mason-Stothers polynomial abc theorem New material included on product structure for matrices including descriptions of the conjugation representation of the diagonal group

This text for a second course in linear algebra, aimed at math majors and graduates, adopts a novel approach by banishing determinants to the end of the book and focusing on understanding the structure of linear operators on vector spaces. The author has taken unusual care to motivate concepts and to simplify proofs. For example, the book presents - without having defined determinants - a clean proof that every linear operator on a finite-dimensional complex vector space has an eigenvalue. The book starts by discussing vector spaces, linear independence, span, basics, and dimension. Students are introduced to inner-product spaces in the first half of the book and shortly thereafter to the finite-dimensional spectral theorem. A variety of interesting exercises in each chapter helps students understand and manipulate the objects of linear algebra. This second edition features new chapters on diagonal matrices, on linear functionals and adjoints, and on the spectral theorem; some sections, such as those on self-adjoint and normal operators, have been entirely rewritten; and hundreds of minor improvements have been made throughout the text.

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This elementary presentation exposes readers to both the process of rigor and the rewards inherent in taking an axiomatic approach to the study of functions of a real variable. The aim is to challenge and improve mathematical intuition rather than to verify it. The philosophy of this book is to focus attention on questions which give analysis its inherent fascination. Each chapter begins with the discussion of some motivating examples and concludes with a series of questions.

This is Volume II of a two-volume introductory text in classical algebra. The text moves methodically with numerous examples and details so that readers with some basic knowledge of algebra can read it without difficulty. It is recommended either as a textbook for some particular algebraic topic or as a reference book for consultations in a selected fundamental branch of algebra. The book contains a wealth of material. Amongst the topics covered in Volume are the theory of ordered fields and Nullstellen Theorems. Known researcher Lorenz also includes the fundamentals of the theory of quadratic forms, of valuations, local fields and modules. What's more, the book contains some lesser known or nontraditional results – for instance, Tsen's results on the solubility of systems of polynomial equations with a sufficiently large number of indeterminates.

Standard text provides an exceptionally comprehensive treatment of every aspect of modern algebra. Explores algebraic structures, rings and fields, vector spaces, polynomials, linear operators, much more. Over 1,300 exercises. 1965 edition.

An entertaining mathematical exploration of the heat equation and its role in the triumphant development of the trans-Atlantic telegraph cable Heat, like gravity, shapes nearly every aspect of our world and universe, from how milk dissolves in coffee to how molten planets cool. The heat equation, a cornerstone of modern physics, demystifies such processes, painting a mathematical picture of the way heat diffuses through matter. Presenting the mathematics and history behind the heat equation, *Hot Molecules, Cold Electrons* tells the remarkable story of how this foundational idea brought about one of the greatest technological advancements of the modern era. Paul Nahin vividly recounts the heat equation's tremendous influence on society, showing how French mathematical physicist Joseph Fourier discovered, derived, and solved the equation in the early nineteenth century. Nahin then follows Scottish physicist William Thomson, whose further analysis of Fourier's explorations led to the pioneering trans-Atlantic telegraph cable. This feat of engineering reduced the time it took to send a message across the ocean from weeks to minutes. Readers also learn that Thomson used Fourier's solutions to calculate the age of the earth, and, in a bit of colorful lore, that writer Charles Dickens relied on the trans-Atlantic cable to save himself from a career-damaging scandal. The book's mathematical and scientific explorations can be easily understood by anyone with a basic knowledge of high school calculus and physics, and MATLAB code is included to aid readers who would like to solve the heat equation themselves. A testament to the intricate links between mathematics and physics, *Hot Molecules, Cold Electrons* offers a fascinating glimpse into the relationship between a formative equation and one of the most important developments in the history of human communication.

About The Book: This book on algebra includes extensive revisions of the material on finite groups and Galois Theory. Further more the book also contains new problems relating to Algebra.

Considered a classic by many, *A First Course in Abstract Algebra* is an in-depth introduction to abstract algebra. Focused on groups, rings and fields, this text gives students a firm foundation for more specialized work by emphasizing an understanding of the nature of algebraic structures.

This self-contained text covers sets and numbers, elements of set theory, real numbers, the theory of groups, group isomorphism and homomorphism, theory of rings, and polynomial rings. 1969 edition.

