ALGEBRA

PATRICK MORANDI, New Mexico State University, Las Cruces

Field and Galois Theory

This book deals with classical Galois theory of both finite and infinite extensions, and with transcendental extensions, focusing on finitely generated extensions and connections with algebraic geometry. The purpose of this book is twofold. First, it is written to be a textbook for a graduate-level course on Galois theory or field theory. Second, it is designed to be a reference for researchers who need to know field theory. Readers who do not have the proper background can consult the appendices on ring theory, set theory, group theory, and vector spaces. This book features a large number of examples and exercises, and in most cases provides complete proofs for the stated results. 1996/281 PP., 18 ILLUS./HARDCOVER/\$42.50 ISBN 0-387-94753-1

GRADUATE TEXTS IN MATHEMATICS, VOL. 167

JOHN D. DIXON and BRIAN MORTIMER, both of Carleton University, Ottawa, Canada

Permutation Groups

This book begins with the basic ideas, standard constructions, and important examples in the theory of permutation groups. It then develops the combinatorial and group theoretic structure of primitive groups leading to a proof of the pivotal O'Nan-Scott Theorem which links finite primitive groups with finite simple groups, Special topics covered include: the Mathieu groups, multiply transitive groups, and recent work on the subgroups of the infinite symmetric groups. The reader is assumed to have had a first course in group theory. Numerous examples and exercises make the book suitable both as a course text and for self-study.

1996/346 PP./HARDCOVER/\$49.00/ISBN 0-387-94599-7 GRADUATE TEXTS IN MATHEMATICS, VOL. 163

PAUL A. FUHRMANN, Ben Gurion University, Israel

A Polynomial Approach to Linear Algebra

"Fuhrmann takes a different approach to the classical topics of linear algebra and makes a different choice of material. For the analysis of linear transformations and quadratic forms the emphasis is placed on functional models and polynomial algebra. The author uses the first seven chapters of the book for a one-year course on linear algebra. The book is self-contained and on the undergraduate level..."

- JOURNAL OF COMPUTATIONAL AND APPLIED MATHEMATICS

3

Contents: Linear Spaces • Determinants • Linear Transformations • The Shift Operator • Structure Theory of Linear Transformations • Inner Product Spaces • Quadratic Forms • Stability • Elements of System Theory • Hankel Norm Approximation

1996/360 PP./SOFTCOVER/\$39.00/ISBN 0-387-94643-8 UNIVERSITEXT

New Second Edition!

SHELDON AXLER, San Francisco State University

Linear Algebra Done Right

This text for a second course in linear algebra is aimed at math majors and graduate students. The novel approach taken here banishes determinants to the end of the book and focuses on the central goal of linear algebra: 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 (or an odd-dimensional real vector space) has an eigenvalue. A variety of interesting exercises in each chapter helps students understand and manipulate the objects of linear algebra. No prerequisites are assumed other than the usual demand for suitable mathematical maturity. Thus the text starts by discussing vector spaces, linear independence, span, basis, 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. This second edition includes a new section on orthogonal projections and minimization problems. The sections on self-adjoint operators, normal operators, and the spectral theorem have been rewritten. New examples and new exercises have been added, several proofs have been simplified, and hundreds of minor improvements have been made throughout the text.

Contents: Vector Spaces • Finite-Dimensional Vector Spaces • Linear Maps • Polynomials • Eigenvalues and Eigenvectors • Inner-Product Spaces • Operators on Inner-Product Spaces • Operators on Complex Vector Spaces • Operators on Real Vector Spaces • Trace and Determinant

Visit the author's website! http://math.sfsu.edu/Axler 1997/256 PP., 21 ILLUS/SOFTCOVER/\$29.95/ISBN 0-387-98258-2

ALSO IN HARDCOVER: \$59.95/ISBN 0-387-98259-0 UNDERGRADUATE TEXTS IN MATHEMATICS

B.A. SETHURAMAN, California State University, Northridge

Rings, Fields, and Vector Spaces

An Introduction to Abstract Algebra via Geometric Constructibility

Using the proof of the non-trisectability of an arbitrary angle as a final goal, the author develops in an easy conversational style the basics of rings, fields, and vector spaces. The focus of this book is on exposition and on conveying mathematical insight to an audience that is as yet unaccustomed to abstraction. Familiarity with the material is developed by exposing students to a large number of examples, as well as questions that are intended to encourage them to think through the material themselves.

Contents: Introduction: • Divisibility in the Integers • Rings and Fields • Vector Spaces • Field Extensions • Polynomials • The Field Generated by an Element • Straightedge and Compass Constructions

1997/208 PP./HARDCOVER/\$34.95/ISBN 0-387-94848-1 UNDERGRADUATE TEXTS IN MATHEMATICS RAJENDRA BHATIA, Indian Statistical Institute, New Delhi, India

Matrix Analysis

The aim of this book is to present a substantial part of matrix analysis that is functional analytic in spirit. The book can be used as a basic text for graduate courses on advanced linear algebra and matrix analysis. Among the topics covered are the theory of majorization, variational principles for eigenvalues, operator monotone and convex functions, perturbation of matrix functions and matrix inequalities. Much of this material is presented for the first time in a unified way. The reader will learn several powerful methods and techniques of wide applicability, and will see its connections with other areas of mathematics. 1997/368 PP./HARDCOVER/\$49.95/ISBN 0-387-94846-5 GRADUATE TEXTS IN MATHEMATICS, VOL. 169

VISIT YOUR LOCAL TECHNICAL BOOKSTORE • SEE POSTAGE PAID ORDER FORM PAGE 25

