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A concrete introduction to higher algebra pdf

This book is an informal and readable introduction to higher algebra at the post-calculus level. The concepts of ring and field are introduced by studying the familiar examples of integers and polynomials. New examples and theory are constructed in a well-motivated way and are relevant for many applications: cryptography, coding, integration, history of mathematics, and especially the theory of elementary and computational numbers. Later chapters include exhibitions of Rabin's probabilistic primality test, quadratic reciprocity, and the classification of finite fields. More than 900 exercises are found throughout the book. © 1996-2014, Amazon.com, Inc. or its affiliates

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Exercises often appear in the text at the point where they are relevant, as well as at the end of the section or chapter. Tips for selected exercises are given at the end of the book. There is enough material for a two-semester course and several suggestions are offered for courses Semester. Although the global organization remains the same in the second edition, the changes include the following: greater emphasis on finite groups, the more explicit use of homomorphisms, the increased use of the rest theorem, coverage of cubic and quartic polynomial equations, and applications that use the discrete transformation of Fourier. MATHEMATICAL COMMENTS From the reviews of the third edition: This book is an introduction to abstract algebra. ... has sufficient material to give flexibility to the instructor in the course. It's a good book for serious students to have in their library. ... I would recommend this especially for self-study, since the book reads exactly as a good teacher speaks to a class. (Philosophy, Religion and Science Book Reviews, bookinspections.wordpress.com, October, 2013) This book can serve as an introduction to number theory and abstract algebra, sacrifices must be made in terms of its algebraic content. ... the book has been written with a high degree of rigor and precision and I definitely recommend it for consideration as the basis of an alternative route to abstract algebra and its applications. (The Mathematical Association of America, April 2009) The target audience remains students who require a substantial introduction to the elements of university-level algebra. ... The text comes from a foundation built from the familiarity of students with integers and polynomials on fields. It takes great care to proceed to abstract concepts through familiar examples, and many exercises are provided throughout the text. ... A notable feature of the book is the inclusion of extensive material on applications, to topics such as cryptography and polynomial factoring. (Kenneth A. Brown, Mathematical Comments, Number 2009 i) This book is written as an introduction to higher algebra for students with a one-year calculus background. The first edition of this book arose from a set of notes written in the 1970s for a second-level course at the University of Albany entitled Classical Algebra. The aim of the course, and the book, is to give students sufficient experience in the algebraic theory of integers and polynomials to activate the basic concepts of abstract algebra. The main theoretical thread is to develop algebraic properties of the integer ring: unique factorization in primes, congruences and congruence classes, Fermat theorem, the theorem of the rest of China; and then again for the polynomials ring. Doing so leads to the study of simple field extensions and, in particular, an exhibition of finite fields. The elementary properties of rings, fields, groups and homomorphisms of these objects are introduced and used as needed in development. The book presents a wide variety of applications, cryptography, bug correction codes, Latin squares, tournaments, integration techniques, and tary and computational number theory. A student asking: Why am I learning this?, will find usually within a chapter or two. For a first course of algebra, the book offers a couple of advantages. • By building algebra through numbers and polynomials, the book makes the most of the student's previous experience in algebra and arithmetic. In a familiar context, new concepts arise. Context.

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