The Queen of Mathematics: A Historically Motivated Guide to Number Theory

Jay R. Goldman
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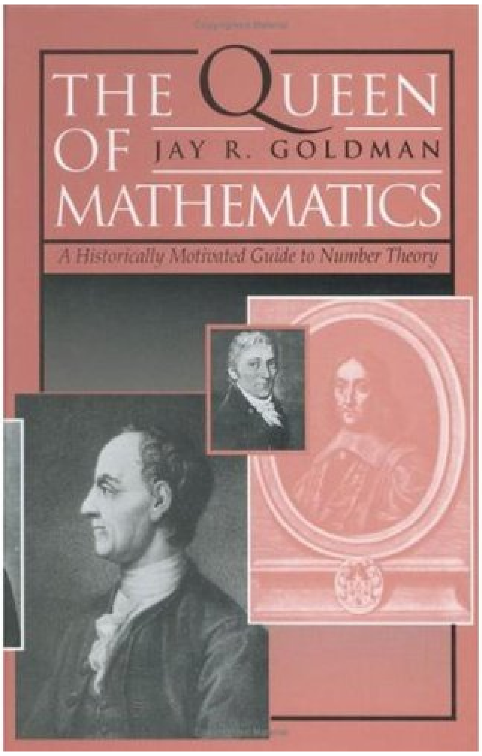

#2660132 in Books A K Peters/CRC Press 1997-11-15Original language:EnglishPDF # 1 1.37 x 6.38 x 9.31l, 2.04 #File Name: 1568810067525 pages | File size: 74.Mb

Jay R. Goldman : The Queen of Mathematics: A Historically Motivated Guide to Number Theory before purchasing it in order to gage whether or not it would be worth my time, and all praised The Queen of Mathematics: A Historically Motivated Guide to Number Theory:

10 of 10 people found the following review helpful. A superbly presented work of impressive scholarshipBy Midwest Book ReviewThe Queen Of Mathematics: A Historically Motivated Guide To Number Theory by Jay R. Goldman (School of Mathematics, University of Minnesota) is a college-level mathematical text that scrutinizes number theory as it was developed through the 17th, 18th, and 19th centuries. The notable contributions of Fermat, Euler, Lagrange, Legendre, Hilbert are meticulously examined are studied and dissected in a pedagogical manner, along with an especial emphasis on the work by Gauss. A superb combination historical narrative and introductory mathematic text, The Queen Of Mathematics is a superbly presented work of impressive scholarship as well as a seminal contribution to the history of the Science of Mathematics academic reference collections and reading lists.25 of 27 people found the following review helpful. Broader introduction than usualBy Darin BrownI would agree with everything the first reviewer has written. This book is very readable, and it introduces a large number of important general concepts in number theory. What separates this book from other "introduction" books is (1) it is pitched at a much higher level than most introductory number theory books, which often assume that proofs and induction are unfamiliar, and so there are many superfluous chapters at the beginning which are just a rehash of basic set theory, how to write proofs,

and modular arithmetic. This book starts from the beginning with Fermat and assumes some mathematical maturity -- ability to read proofs, knowledge of calculus, linear algebra, basic definitions of groups, rings, and fields, about advanced undergraduate, roughly. But the difference in sophistication is more obvious towards the middle and end of the book, where more general concepts from algebra, geometry, and analysis start to appear. This allows the author to talk about a variety of topics that are rarely mentioned in "introductory" books. Put another way -- if you want to see what some of these topics are about, you either have THIS book, or else some rather technical graduate textbooks to start with. Where else is complex multiplication, transcendental number theory, quadratic forms, and p-adic numbers all discussed at an undergraduate level? The other aspect which is different is (2) everything is historically motivated, and this is more than a phrase -- passages of original historical text, problems originally studied, historical commentary, and other folklore are nicely put together with mathematics. The result is that the reader gets a very broad picture of number theory, the "big picture", seeing how number theory isn't some static piece of knowledge sitting somewhere in space, but a body of concepts, ideas, and techniques which naturally developed over the past 400 years. For an advanced undergraduate or graduate student who wants a simple answer to the question, "What is number theory?", I would just refer them to this book.15 of 16 people found the following review helpful. A skillful blend of history and solid number theoryBy S. LittleA clearly written book that covers number theory at a graduate or advanced undergraduate level. Covers much of the material in Gauss's Disquisitiones, but without all the detail. The book covers elementary number theory, binary quadratic forms, cyclotomy, Gaussian integers, quadratic fields, ideals, algebraic curves, rational points on elliptic curves, geometry of numbers, and introduces p-adic numbers. Only a slight bit of analytic number theory is covered. A good book in my opinion to start learning algebraic number theory. Wonderfully fills the otherwise troublesome gap between undergraduate number theory and overly abstract graduate level algebraic number theory.Full of historical information hard to find elsewhere, very well researched. To cover all the material in this book would likely take two semesters, though most of the important material could be covered in one semester. Requires a background in abstract algebra (undergraduate level), and a little advanced calculus. Some complex analysis for sections 19.7 and 19.8 would be helpful, but not at all a requirement. The author recommends Harold Davenport's 'The Higher Arithmetic' as a companion volume for the first 12 chapters, which according to Goldman is a gem of a book.

This book takes the unique approach of examining number theory as it emerged in the 17th through 19th centuries. It leads to an understanding of today's research problems on the basis of their historical development. This book is a contribution to cultural history and brings a difficult subject within the reach of the serious reader.

"A superb combination historical narrative and introductory mathematic text." -Math Works, May 2003