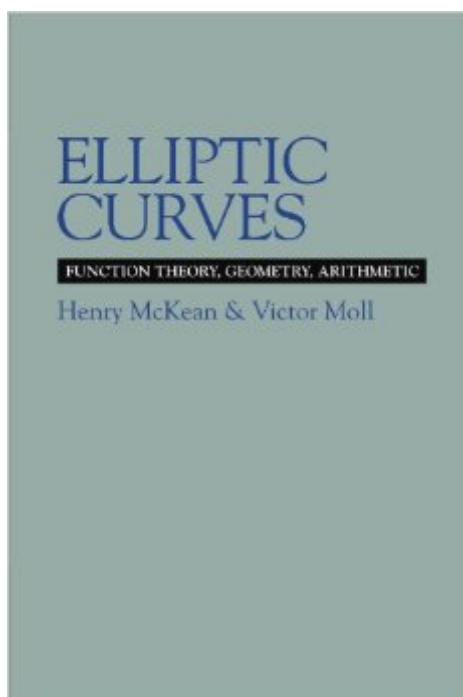


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Elliptic Curves: Function Theory, Geometry, Arithmetic



Synopsis

The subject of elliptic curves is one of the jewels of nineteenth-century mathematics, whose masters were Abel, Gauss, Jacobi, and Legendre. This book presents an introductory account of the subject in the style of the original discoverers, with references to and comments about more recent and modern developments. It combines three of the fundamental themes of mathematics: complex function theory, geometry, and arithmetic. After an informal preparatory chapter, the book follows a historical path, beginning with the work of Abel and Gauss on elliptic integrals and elliptic functions. This is followed by chapters on theta functions, modular groups and modular functions, the quintic, the imaginary quadratic field, and on elliptic curves. The many exercises with hints scattered throughout the text give the reader a glimpse of further developments. Requiring only a first acquaintance with complex function theory, this book is an ideal introduction to the subject for graduate students and researchers in mathematics and physics.

Book Information

Paperback: 298 pages

Publisher: Cambridge University Press (August 13, 1999)

Language: English

ISBN-10: 0521658179

ISBN-13: 978-0521658171

Product Dimensions: 6 x 0.7 x 9 inches

Shipping Weight: 1.1 pounds (View shipping rates and policies)

Average Customer Review: 4.8 out of 5 stars [See all reviews](#) (5 customer reviews)

Best Sellers Rank: #1,352,621 in Books (See Top 100 in Books) #183 in [Books > Science & Math > Mathematics > Geometry & Topology > Algebraic Geometry](#) #283 in [Books > Science & Math > Mathematics > Pure Mathematics > Functional Analysis](#) #308 in [Books > Science & Math > Mathematics > Geometry & Topology > Topology](#)

Customer Reviews

This book avoids the traps which would make this subject so inaccessible. Rather than frightening the reader with group theory and the sort of very advanced material that would fit it into a post graduate slot, the book starts with very little beyond geometry and complex number theory. The book carefully progresses to discussions on the projective line, and Riemann surfaces (never too much at once) to the inevitable subjects of the Icosohedral group, and invariant theory. It manages to do this almost without you noticing the depth of maths that is being covered - quite a feat!From

here on, elliptic integrals are discussed, and the work of Jacobi, Gauss, Legendre and Abel discussed freely, with many examples and clear pictures. The text is interspersed with exercises (some of which you can do with a few moments thought, others more difficult). I enjoyed this section (and the remainder of the book) for several very interesting short accounts of subjects slightly tangential to the main material.[One of my favorites was the account of a letter with a amazingly strange but elegant identity with a continued fraction sent by Ramanujan to Hardy, and Hardy's subsequent absolute amazement... You MUST NOT miss reading that, even if it isn't what you picked the book up for!]Then the book goes into the area I bought the book for - modular groups, and the solution of the Quintic. This subject draws mostly on work by Hermite, and later, Klein, but is presented carefully and slowly.I was very glad to find this book. It doesn't race through the subject at breakneck speed, which is what some books on Galois Theory or Algebraic Curves do, and has illuminated quite a few additional topics for me.

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