Elementary Algebraic Geometry Second Edition Keith Kendig

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Elementary Algebraic Geometry - K. Kendig
2012-07-26

This book was written to make learning introductory algebraic geometry as easy as

possible. It is designed for the general first- and second-year graduate student, as well as for the nonspecialist; the only prerequisites are a one-year course in algebra and a little complex analysis. There are many examples and pictures in the book. One's sense of intuition is largely built up from exposure to concrete examples, and intuition in algebraic geometry is no exception. I have also tried to avoid too much generalization. If one under stands the core of an idea in a concrete setting, later generalizations become much more meaningful. There are exercises at the end of most sections so that the reader can test his understanding of the material. Some are routine, others are more challenging. Occasionally, easily established results used in the text have been made into exercises. And from time to time, proofs of topics not covered in the text are sketched and the reader is asked to fill in the details. Chapter I is of an introductory nature. Some of the geometry of a few specific algebraic curves is worked out, using a tactical approach that might naturally be tried by one not familiar with the general methods intro duced later in the book. Further examples in this chapter suggest other basic properties of curves. In Chapter II, we look at curves more rigorously and carefully.

A Guide to Plane Algebraic Curves - Keith Kendig 2011-12-31
An accessible introduction to plane algebraic curves that also serves as a natural entry point to algebraic geometry.
Complex Algebraic Curves - Frances Clare Kirwan 1992-02-20
This development of the theory of complex algebraic curves was one of the peaks of nineteenth century mathematics. They have many fascinating properties and arise in various areas of mathematics, from number theory to theoretical physics, and are the subject of much research. By using only the basic techniques acquired in most undergraduate courses in mathematics, Dr. Kirwan introduces the theory,

observes the algebraic and topological properties of complex algebraic curves, and shows how they are related to complex analysis.
A Gateway to Number Theory: Applying the Power of Algebraic Curves - Keith Kendig 2021-04-23
Challenge: Can you find all the integers a, b, c satisfying $2a^2+3b^2=5c^2$? Looks simple, and there are in fact a number of easy solutions. But most of them turn out to be anything but obvious! There are infinitely many possibilities, and as any computer will tell you, each of a, b, c will usually be large. So the challenge remains … Find all integers a a, b, c satisfying $2a^2+3b^2=5c^2$ A major advance in number theory means this book can give an easy answer to this and countless similar questions. The idea behind the approach is transforming a degree-two equation in integer variables a, b, c into a plane curve defined by a polynomial. Working with the curve makes obtaining solutions far easier, and the geometric solutions then get translated back into integers. This method morphs hard problems into routine ones and typically requires no more than high school math. (The complete solution to $2a^2+3b^2=5c^2$ is included in the book.) In addition to equations of degree two, the book addresses degree-three equations—a branch of number theory that is today something of a cottage industry, and these problems translate into "elliptic curves". This important part of the book includes many pictures along with the exposition, making the material meaningful and easy to grasp. This book will fit nicely into an introductory course on number theory. In addition, the many solved examples, illustrations, and exercises make self-studying the book an option for students, thus becoming a natural candidate for a capstone course.
Plane Algebraic Curves - Gerd Fischer 2001 This is an excellent introduction to algebraic geometry, which assumes only standard undergraduate mathematical topics: complex

analysis, rings and fields, and topology. Reading this book will help establish the geometric intuition that lies behind the more advanced ideas and techniques used in the study of higher-dimensional varieties.

Algebra I Essentials For Dummies - Mary Jane Sterling 2019-04-15
Algebra I Essentials For Dummies (9781119590965) was previously published as Algebra I Essentials For Dummies (9780470618349). While this version features a new Dummies cover and design, the content is the same as the prior release and should not be considered a new or updated product. With its use of multiple variables, functions, and formulas algebra can be confusing and overwhelming to learn and easy to forget. Perfect for students who need to review or reference critical concepts, Algebra I Essentials For Dummies provides content focused on key topics only, with discrete explanations of critical concepts taught in a typical Algebra I course, from functions and FOILs to quadratic and linear equations. This guide is also a perfect reference for parents who need to review critical algebra concepts as they help students with homework assignments, as well as for adult learners headed back into the classroom who just need a refresher of the core concepts. The Essentials For Dummies Series Dummies is proud to present our new series, The Essentials For Dummies. Now students who are prepping for exams, preparing to study new material, or who just need a refresher can have a concise, easy-to-understand review guide that covers an entire course by concentrating solely on the most important concepts. From algebra and chemistry to grammar and Spanish, our expert authors focus on the skills students most need to succeed in a subject.

Foundations of Hyperbolic Manifolds - John Ratcliffe 2013-03-09
This book is an exposition of the theoretical foundations of hyperbolic manifolds. It is

intended to be used both as a textbook and as a reference. Particular emphasis has been placed on readability and completeness of ar gument. The treatment of the material is for the most part elementary and self-contained. The reader is assumed to have a basic knowledge of algebra and topology at the first-year graduate level of an American university. The book is divided into three parts. The first part, consisting of Chap ters 1-7, is concerned with hyperbolic geometry and basic properties of discrete groups of isometries of hyperbolic space. The main results are the existence theorem for discrete reflection groups, the Bieberbach theorems, and Selberg's lemma. The second part, consisting of Chapters 8-12, is de voted to the theory of hyperbolic manifolds. The main results are Mostow's rigidity theorem and the determination of the structure of geometrically finite hyperbolic manifolds. The third part, consisting of Chapter 13, in tegrates the first two parts in a development of the theory of hyperbolic orbifolds. The main results are the construction of the universal orbifold covering space and Poincare's fundamental polyhedron theorem.

The Theory and Practice of Conformal Geometry - Steven G. Krantz 2016-03-17 In this original text, prolific mathematics author Steven G. Krantz addresses conformal geometry, a subject that has occupied him for four decades and for which he helped to develop some of the modern theory. This book takes readers with a basic grounding in complex variable theory to the forefront of some of the current approaches to the topic. "Along the way," the author notes in his Preface, "the reader will be exposed to some beautiful function theory and also some of the rudiments of geometry and analysis that make this subject so vibrant and lively." More up-to-date and accessible to advanced undergraduates than most of the other books available in this specific field, the treatment discusses the history of this active and popular branch of mathematics as well as recent developments. Topics include

the Riemann mapping theorem, invariant metrics, normal families, automorphism groups, the Schwarz lemma, harmonic measure, extremal length, analytic capacity, and invariant geometry. A helpful Bibliography and Index complete the text.

A Book of Abstract Algebra - Charles C Pinter 2010-01-14
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.

A Guide to Plane Algebraic Curves - Keith Kendig 2011
This Guide is a friendly introduction to plane algebraic curves. It emphasizes geometry and intuition, and the presentation is kept concrete.

You'll find an abundance of pictures and examples to help develop your intuition about the subject, which is so basic to understanding and asking fruitful questions. Highlights of the elementary theory are covered, which for some could be an end in itself, and for others an invitation to investigate further. Proofs, when given, are mostly sketched, some in more detail, but typically with less. References to texts that provide further discussion are often included. Computer algebra software has made getting around in algebraic geometry much easier. Algebraic curves and geometry are now being applied to areas such as cryptography, complexity and coding theory, robotics, biological networks, and coupled dynamical systems. Algebraic curves were used in Andrew Wiles' proof of Fermat's Last Theorem, and to understand string theory, you need to know some algebraic geometry. There are other areas on the horizon for which the concepts and tools of algebraic curves and geometry hold

tantalizing promise. This introduction to algebraic curves will be appropriate for a wide segment of scientists and engineers wanting an entrance to this burgeoning subject.

Algebraic Geometry - Solomon Lefschetz 2015-12-08
The first application of modern algebraic techniques to a comprehensive selection of classical geometric problems. Written with spirit and originality, this is a valuable book for anyone interested in the subject from other than the purely algebraic point of view. Originally published in 1953. The Princeton Legacy Library uses the latest print-on-demand technology to again make available previously out-of-print books from the distinguished backlist of Princeton University Press. These editions preserve the original texts of these important books while presenting them in durable paperback and hardcover editions. The goal of the Princeton Legacy Library is to vastly increase access to the rich scholarly heritage found in the thousands of books published by Princeton University Press since its founding in 1905.

Lie Groups, Physics, and Geometry - Robert Gilmore 2008-01-17
Describing many of the most important aspects of Lie group theory, this book presents the subject in a 'hands on' way. Rather than concentrating on theorems and proofs, the book shows the applications of the material to physical sciences and applied mathematics. Many examples of Lie groups and Lie algebras are given throughout the text. The relation between Lie group theory and algorithms for solving ordinary differential equations is presented and shown to be analogous to the relation between Galois groups and algorithms for solving polynomial equations. Other chapters are devoted to differential geometry, relativity, electrodynamics, and the hydrogen atom. Problems are given at the end of each chapter so readers can monitor their understanding of the

materials. This is a fascinating introduction to Lie groups for graduate and undergraduate students in physics, mathematics and electrical engineering, as well as researchers in these fields.

Masters of Mathematics - Robert A. Nowlan 2017-05-13
The original title for this work was "Mathematical Literacy, What Is It and Why You Need it". The current title reflects that there can be no real learning in any subject, unless questions of who, what, when, where, why and how are raised in the minds of the learners. The book is not a mathematical text, and there are no assigned exercises or exams. It is written for reasonably intelligent and curious individuals, both those who value mathematics, aware of its many important applications and others who have been inappropriately exposed to mathematics, leading to indifference to the subject, fear and even loathing. These feelings are all consequences of meaningless presentations, drill, rote learning and being lost as the purpose of what is being studied. Mathematics education needs a radical reform. There is more than one way to accomplish this. Here the author presents his approach of wrapping mathematical ideas in a story. To learn one first must develop an interest in a problem and the curiosity to find how masters of mathematics have solved them. What is necessary to be mathematically literate? It's not about solving algebraic equations or even making a geometric proof. These are valuable skills but not evidence of literacy. We often seek answers but learning to ask pertinent questions is the road to mathematical literacy. Here is the good news: new mathematical ideas have a way of finding applications. This is known as "the unreasonable effectiveness of mathematics."

The Schwarz Lemma - Sean Dineen 2016-04-06
Suitable for advanced undergraduates and graduate students, this self-contained overview covers the classical Schwarz lemma, Poincaré

distance on the unit disc, hyperbolic manifolds, holomorphic curvature, and the analytic Radon-Nikodym property. 1989 edition.

A Concrete Introduction to Higher Algebra - Lindsay N. Childs 2012-12-04

An informal and readable introduction to higher algebra at the post-calculus level. The concepts of ring and field are introduced through study of the familiar examples of the integers and polynomials, with much emphasis placed on congruence classes leading the way to finite groups and finite fields. New examples and theory are integrated in a well-motivated fashion and made relevant by many applications -- to cryptography, coding, integration, history of mathematics, and especially to elementary and computational number theory. The later chapters include expositions of Rabiin's probabilistic primality test, quadratic reciprocity, and the classification of finite fields. Over 900 exercises, ranging from routine examples to extensions of theory, are scattered throughout the book, with hints and answers for many of them included in an appendix.

Visual Complex Analysis - Tristan Needham 1997

This radical approach to complex analysis replaces the standard calculational arguments with new geometric ones. Using several hundred diagrams this is a new visual approach to the topic.

Orthogonal Polynomials on the Unit Circle - Barry Simon 2009-08-05

This two-part book is a comprehensive overview of the theory of probability measures on the unit circle, viewed especially in terms of the orthogonal polynomials defined by those measures. A major theme involves the connections between the Verblunsky coefficients (the coefficients of the recurrence equation for the orthogonal polynomials) and the measures, an analog of the spectral theory of one-dimensional Schrodinger operators. Among the topics discussed along the way are the asymptotics of Toeplitz determinants (Szego's

theorems), limit theorems for the density of the zeros of orthogonal polynomials, matrix representations for multiplication by z (CMV matrices), periodic Verblunsky coefficients from the point of view of meromorphic functions on hyperelliptic surfaces, and connections between the theories of orthogonal polynomials on the unit circle and on the real line.

Elementary Algebraic Geometry - Keith Kendig 2015-02-18
"This second edition of an introductory text is intended for advanced undergraduate and graduate students who have taken a one-year course in algebra and are familiar with complex analysis. Concrete examples and exercises illuminate chapters on curves, ring theory, arbitrary dimension, and other topics. Includes numerous updated figures specially redrawn for this edition. 2014 edition"--
The American Mathematical Monthly - 1983

Iteration of Rational Functions - Alan F. Beardon 2000-09-27
This book focuses on complex analytic dynamics, which dates from 1916 and is currently attracting considerable interest. The text provides a comprehensive, well-organized treatment of the foundations of the theory of iteration of rational functions of a complex variable. The coverage extends from early memoirs of Fatou and Julia to important recent results and methods of Sullivan and Shishikura. Many details of the proofs have not appeared in print before.

Undergraduate Algebraic Geometry - Miles Reid 1988-12-15
Algebraic geometry is, essentially, the study of the solution of equations and occupies a central position in pure mathematics. This short and readable introduction to algebraic geometry will be ideal for all undergraduate mathematicians coming to the subject for the first time. With the minimum of prerequisites, Dr Reid introduces the reader to the basic concepts of algebraic

geometry including: plane conics, cubics and the group law, affine and projective varieties, and non-singularity and dimension. He is at pains to stress the connections the subject has with commutative algebra as well as its relation to topology, differential geometry, and number theory. The book arises from an undergraduate course given at the University of Warwick and contains numerous examples and exercises illustrating the theory.

Library Recommendations for Undergraduate Mathematics - Mathematical Association of America. Committee on the Undergraduate Program in Mathematics 1992

Introduction to Algebraic Geometry - Serge Lang 2019-03-20
Rapid, concise, self-contained introduction assumes only familiarity with elementary algebra. Subjects include algebraic varieties; products, projections, and correspondences; normal varieties; differential forms; theory of

simple points; algebraic groups; more. 1958 edition.

Physics from Symmetry - Jakob Schwichtenberg 2017-12-01
This is a textbook that derives the fundamental theories of physics from symmetry. It starts by introducing, in a completely self-contained way, all mathematical tools needed to use symmetry ideas in physics. Thereafter, these tools are put into action and by using symmetry constraints, the fundamental equations of Quantum Mechanics, Quantum Field Theory, Electromagnetism, and Classical Mechanics are derived. As a result, the reader is able to understand the basic assumptions behind, and the connections between the modern theories of physics. The book concludes with first applications of the previously derived equations. Thanks to the input of readers from around the world, this second edition has been purged of typographical errors and also contains several revised sections with improved explanations.

Differential Equations - Paul Blanchard
2012-07-25
Incorporating an innovative modeling approach, this book for a one-semester differential equations course emphasizes conceptual understanding to help users relate information taught in the classroom to real-world experiences. Certain models reappear throughout the book as running themes to synthesize different concepts from multiple angles, and a dynamical systems focus emphasizes predicting the long-term behavior of these recurring models. Users will discover how to identify and harness the mathematics they will use in their careers, and apply it effectively outside the classroom. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.
My Search for Ramanujan - Ken Ono 2016-04-20
"The son of a prominent Japanese mathematician who came to the United States after World War II, Ken Ono was raised on a diet of high expectations and little praise. Rebelling against his pressure-cooker of a life, Ken determined to drop out of high school to follow his own path. To obtain his father's approval, he invoked the biography of the famous Indian mathematical prodigy Srinivasa Ramanujan, whom his father revered, who had twice flunked out of college because of his single-minded devotion to mathematics. Ono describes his rocky path through college and graduate school, interweaving Ramanujan's story with his own and telling how at key moments, he was inspired by Ramanujan and guided by mentors who encouraged him to pursue his interest in exploring Ramanujan's mathematical legacy. Picking up where others left off, beginning with the great English mathematician G.H. Hardy, who brought Ramanujan to Cambridge in 1914, Ono has devoted his mathematical career to understanding how in his short life, Ramanujan was able to discover so many deep mathematical

truths, which Ramanujan believed had been sent to him as visions from a Hindu goddess. And it was Ramanujan who was ultimately the source of reconciliation between Ono and his parents. Ono's search for Ramanujan ranges over three continents and crosses paths with mathematicians whose lives span the globe and the entire twentieth century and beyond. Along the way, Ken made many fascinating discoveries. The most important and surprising one of all was his own humanity."

Topology - Tai-Danae Bradley 2020-08-18 A graduate-level textbook that presents basic topology from the perspective of category theory. This graduate-level textbook on topology takes a unique approach: it reintroduces basic, point-set topology from a more modern, categorical perspective. Many graduate students are familiar with the ideas of point-set topology and they are ready to learn something new about them. Teaching the subject using category theory—a contemporary branch of mathematics that provides a way to represent abstract concepts—both deepens students' understanding of elementary topology and lays a solid foundation for future work in advanced topics. After presenting the basics of both category theory and topology, the book covers the universal properties of familiar constructions and three main topological properties—connectedness, Hausdorff, and compactness. It presents a fine-grained approach to convergence of sequences and filters; explores categorical limits and colimits, with examples; looks in detail at adjunctions in topology, particularly in mapping spaces; and examines additional adjunctions, presenting ideas from homotopy theory, the fundamental groupoid, and the Seifert van Kampen theorem. End-of-chapter exercises allow students to apply what they have learned. The book expertly guides students of topology through the important transition from undergraduate student with a solid background in analysis or point-set

topology to graduate student preparing to work on contemporary problems in mathematics.

Optimization in Function Spaces - Amol Sasane 2016-03-15
Classroom-tested at the London School of Economics, this original, highly readable text offers numerous examples and exercises as well as detailed solutions. Prerequisites are multivariable calculus and basic linear algebra. 2015 edition.

Computer Graphics and Geometric Modelling - Max K. Agoston 2005-02
The second book of a two-volume work in which the author presents an overview of computer graphics as seen in the context of geometric modeling and the mathematics required to understand the subject.

Elementary Point-Set Topology - Andre L. Yandl 2016-05-18
This versatile, original approach, which focuses on learning to read and write proofs, serves as both an introductory treatment and a bridge between elementary calculus and more advanced courses. 2016 edition.

Academic American Encyclopedia - 1994

Books and Pamphlets, Including Serials and Contributions to Periodicals - Library of Congress. Copyright Office 1977-07

Noncommutative Algebra - Benson Farb 2012-12-06
About This Book This book is meant to be used by beginning graduate students. It covers basic material needed by any student of algebra, and is essential to those specializing in ring theory, homological algebra, representation theory and K-theory, among others. It will also be of interest to students of algebraic topology, functional analysis, differential geometry and number theory. Our approach is more homological than ring-theoretic, as this leads the to many important areas of mathematics. This ap student more quickly proach is also, we believe, cleaner

and easier to understand. However, the more classical, ring-theoretic approach, as well as modern extensions, are also presented via several exercises and sections in Chapter Five. We have tried not to leave any gaps on the paths to proving the main theorem- at most we ask the reader to fill in details for some of the sideline results; indeed this can be a fruitful way of solidifying one's understanding.

A Concrete Introduction to Higher Algebra - Lindsay Childs 2012-12-06
This book is written as an introduction to higher algebra for students with a background of a year of calculus. The book developed out of a set of notes for a sophomore-junior level course at the State University of New York at Albany entitled Classical Algebra. In the 1950s and before, it was customary for the first course in algebra to be a course in the theory of equations, consisting of a study of polynomials over the complex, real, and rational numbers, and, to a lesser extent, linear algebra from the point of view of systems of equations. Abstract algebra, that is, the study of groups, rings, and fields, usually followed such a course. In recent years the theory of equations course has disappeared. Without it, students entering abstract algebra courses tend to lack the experience in the algebraic theory of the basic classical examples of the integers and polynomials necessary for understanding, and more importantly, for ap preciating the formalism. To meet this problem, several texts have recently appeared introducing algebra through number theory.

Barnes & Noble New American Encyclopedia - 1991

Elementary Algebraic Geometry - Klaus Hulek 2003
This book is a true introduction to the basic concepts and techniques of algebraic geometry. The language is purposefully kept on an elementary level, avoiding sheaf theory and cohomology theory. The introduction of new

algebraic concepts is always motivated by a discussion of the corresponding geometric ideas. The main point of the book is to illustrate the interplay between abstract theory and specific examples. The book contains numerous problems that illustrate the general theory. The text is suitable for advanced undergraduates and beginning graduate students. It contains sufficient material for a one-semester course. The reader should be familiar with the basic concepts of modern algebra. A course in one complex variable would be helpful, but is not necessary.

New Technical Books - New York Public Library 1977

Algebraic Geometry - Thomas A. Garrity 2013-02-01
Algebraic Geometry has been at the center of much of mathematics for hundreds of years. It is not an easy field to break into, despite its humble beginnings in the study of circles, ellipses, hyperbolas, and parabolas. This text consists of a series of ex

Catalog of Copyright Entries, Third Series - Library of Congress. Copyright Office 1977
Includes index.

Basic Algebra II - Nathan Jacobson 2009-07-22
This classic text and standard reference comprises all subjects of a first-year graduate-level course, including in-depth coverage of groups and polynomials and extensive use of categories and functors. 1989 edition.