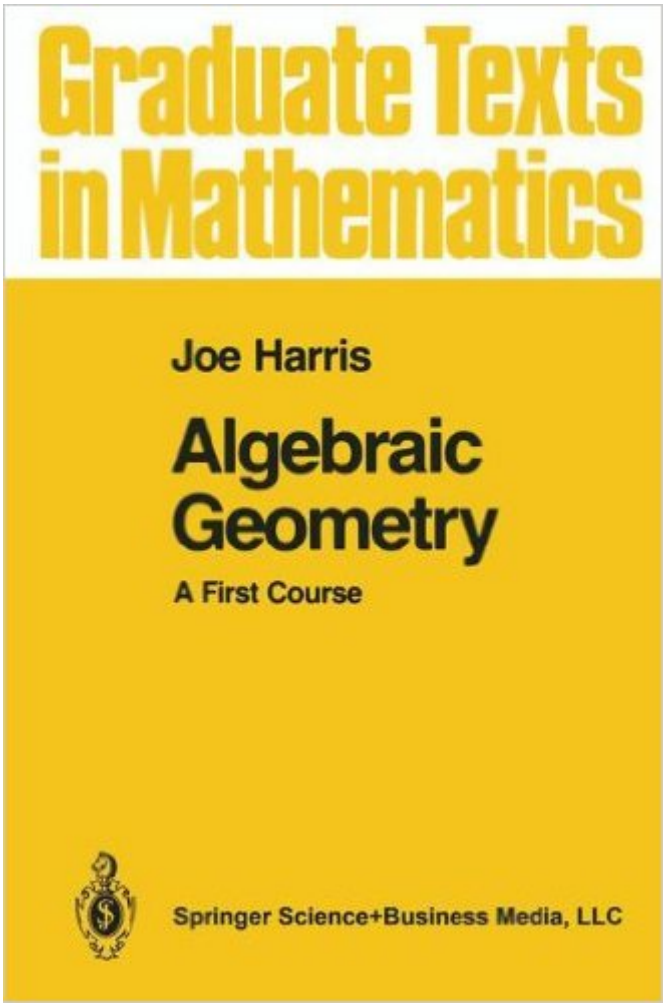
Algebraic Geometry: A First Course (Graduate Texts In Mathematics) (v. 133)



Synopsis

"This book succeeds brilliantly by concentrating on a number of core topics...and by treating them in a hugely rich and varied way. The author ensures that the reader will learn a large amount of classical material and perhaps more importantly, will also learn that there is no one approach to the subject. The essence lies in the range and interplay of possible approaches. The author is to be congratulated on a work of deep and enthusiastic scholarship." --MATHEMATICAL REVIEWS

Book Information

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Customer Reviews

If one is planning to do work in coding theory, cryptography, computer graphics, digitial watermarking, or are hoping to become a mathematician specializing in algebraic geometry, this book will be of an enormous help. The author does a first class job in introducing the reader to the field of algebraic geometry, using a wealth of examples and with the goal of building intuition and understanding. It is great that a mathematician of the author’s caliber would take the time to write these lectures here put into book form. It is rare to find a book on algebraic geometry that attempts to make the subject concrete and understandable, and yet points the way to more modern "scheme-theoretic" formulations. In lecture 1, the author introduces affine and projective varieties over algebraically closed fields. Linear subspaces of n-dimensional projective space P(n) are shown to be varieties, along with any finite subset of P(n). He delays giving rigorous definitions of degree and dimension, emphasizing instead concrete examples of varieties. The twisted cubic is given as the first example of a concrete variety that is not a hypersurface, along with their generalizations,

the rational normal curves. The Zariski topology, considered by the newcomer to the subject as being a rather "strange" topology, is introduced in lecture 2. The author does a great job though explaining its properties, and introduces the regular functions on affine and projective varieties. The Nullstellensatz theorem, needed to prove that the ring of regular functions is the coordinate ring, is deferred to a later lecture. Rational normal curves are further generalized to Veronese maps in this lecture, and the properties of the corresponding Veronese varieties discussed in some detail.

Last year we used this title as a main reference for the first two quarters of a year-long introductory sequence on algebraic geometry, at the beginning graduate student level (2nd year). Our professor --who was himself a former student of Harris, and a specialist in the Mori program-- backed up the presentation with personal lecture notes, moving mostly in parallel to the book's topics. In the third quarter of the sequence, we moved up to cover the theory of sheaves and schemes from Robin Hartshorne's advanced treatise. Prior to this point, my only exposure to the subject was from the corresponding chapter in Dummit and Foote's algebra, and also from a recent introductory text, "An Invitation to Algebraic Geometry" by Karen Smith et al. At this stage of my studies I was mainly testing the waters: My ineterest on one hand was driven by a curiosity for the subject itself, which has a reputation for being difficult and hard to grasp, and on the other hand from its pivotal role in the formulation of new physical theories of mirror symmetry and string theory (for more in this direction, see the 1999 AMS title by A. Cox and S. Katz).Back to the present text, as the editorial notes correctly point out, this Harris book emphasizes the classical algebraic geometry from the 19th & early 20th centuries prior to the introduction of highly abstract machinery, due to the work of A. Groethendieck in the 50's and 60's. Therefore it's quite natural to base the treatment mostly on the examples and concrete constructions, which were the guiding principles of the abstract development in the first place.

K-Book: An Introduction to Algebraic K-Theory (Graduate Studies in Mathematics) Number Theory: Algebraic Numbers and Functions (Graduate Studies in Mathematics) 3264 and All That: A Second Course in Algebraic Geometry Algebraic Geometry I: Complex Projective Varieties (Classics in Mathematics) Conics and Cubics: A Concrete Introduction to Algebraic Curves (Undergraduate Texts in Mathematics) Basic Concepts of Algebraic Topology (Undergraduate Texts in Mathematics) Elementary Algebraic Geometry (Student Mathematical Library, Vol. 20) (Student Mathematical Library, V. 20) Algebraic Geometry: A Problem Solving Approach (Student Mathematical Library) A Royal Road to Algebraic Geometry Algebraic Geometry Principles of Algebraic Geometry