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Algebraic Geometry #1 - Introduction - LearnMathsFree

Algebraic curves, tropical geometry, and moduli - Sam Payne Robert Kucharczyk: The geometry and arithmetic of triangular modular curves Ravi Vakil: Algebraic geometry and the ongoing

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Michael Atiyah - From Algebraic Geometry to Physics - a Personal Perspective [2010]

Joe Harris | Rationality questions in algebraic geometry
Cryptographic Problems in Algebraic Geometry Lecture
Introduction to Tropical Algebraic Geometry (1 of 5) *Arithmetic Geometry and Arithmetic Dynamics: A math club student talk by Brandon Gontmacher* Miles Reid (Univ. of Warwick/Sogang Univ.) / Basic Algebraic Geometry 1

Complex surfaces 4: Ruled surfaces Algebraic Geometry And Arithmetic Curves

As to the first, purely algebro-geometric part of the book, it seems fair to say that this is, after A. Grothendieck's voluminoustreatise "Éléments de Géométrie Algébrique. I--IV" (EGA I--IV), the most comprehensive and detailed elaboration of the theory of algebraic

schemes available in (text-)book form, whereas the second, merely arithmetic part provides the very first systematic and coherent introduction to the advanced theory of arithmetic curves and surfaces at all.

Algebraic Geometry and Arithmetic Curves

Buy Algebraic Geometry and Arithmetic Curves (Oxford Graduate Texts in Mathematics) New Ed by Qing Liu, Reinie Erné (ISBN: 9780199202492) from Amazon's Book Store. Everyday low prices and free delivery on eligible orders.

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Algebraic Geometry and Arithmetic Curves. Qing Liu. Oxford

Graduate Texts in Mathematics. Description. This book is a general introduction to the theory of schemes, followed by applications to arithmetic surfaces and to the theory of reduction of algebraic curves.

Algebraic Geometry and Arithmetic Curves - Hardcover ...

Oxford Graduate Texts in Mathematics. This new-in-paperback edition provides a general introduction to algebraic and arithmetic geometry, starting with the theory of schemes, followed by applications to arithmetic surfaces and to the theory of reduction of algebraic curves. Including clear explanations of both theory and applications, and almost 600 exercises, this book is ideal for graduate students in algabreic geometry and number theory.

Algebraic Geometry and Arithmetic Curves - Paperback ...

Algebraic geometry is a branch of mathematics, classically studying zeros of multivariate polynomials.Modern algebraic geometry is based on the use of abstract algebraic techniques, mainly from commutative algebra, for solving geometrical problems about these sets of zeros.. The fundamental objects of study in algebraic geometry are algebraic varieties, which are geometric manifestations of ...

Algebraic geometry - Wikipedia

Algebraic varieties are the central objects of study in algebraic geometry, a sub-field of mathematics.Classically, an algebraic variety is defined as the set of solutions of a system of polynomial equations over the real or complex numbers.Modern definitions

generalize this concept in several different ways, while attempting to preserve the geometric intuition behind the original definition.

Algebraic variety - Wikipedia

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Algebraic Geometry and Arithmetic Curves: Liu, Qing, Erne ...

In mathematics, arithmetic geometry is roughly the application of techniques from algebraic geometry to problems in number theory. Arithmetic geometry is centered around Diophantine geometry, the study of rational points of algebraic varieties. In more abstract terms, arithmetic geometry can be defined as the study of schemes of finite type over the spectrum of the ring of integers.

Arithmetic geometry - Wikipedia

Descripción. This new-in-paperback edition provides a general introduction to algebraic and arithmetic geometry, starting with the theory of schemes, followed by applications to arithmetic surfaces and to the theory of reduction of algebraic curves. The first part introduces basic objects such as schemes, morphisms, base change, local properties (normality, regularity, Zariski's Main Theorem).

Algebraic Geometry and Arithmetic Curves : Qing Liu ...

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algebraic geometry - Differentials on hyperelliptic curves ...
Qing Liu, Algebraic geometry and arithmetic curves, 592 pp.

Oxford Univ. Press 2002; D. Eisenbud, J. Harris, The geometry of schemes, Springer Grad. Texts in Math. David Mumford, Red book of varieties and schemes (cf. also unfinished sequel notes for the later part of Mumford's course, coauthored with Oda, ch. 1-6 pdf, ch. 7-8 pdf)

books in algebraic geometry in nLab

Let (E, 0) be an elliptic curve, using Riemann-Roch we construct an isomorphism into Projk[X, Y, Z] / Y2Z + a1XYZ + a3YZ2 ? X3 ? a2X2Z ? a4XZ2 ? a6Z3 that can be written informally as P ? [x(P): y(P): 1(P)], where x and y are rational functions such that v0(x) = ? 2 and v0(y) = ? 3.

algebraic geometry - Rational functions on elliptic curves ...

Review from previous edition Will be useful to graduate students as an introduction to arithmetic algebraic geometry, and to more advanced readers and experts in the field. EMS show more

This book is a general introduction to the theory of schemes, followed by applications to arithmetic surfaces and to the theory of reduction of algebraic curves. The first part introduces basic objects such as schemes, morphisms, base change, local properties (normality, regularity, Zariski's Main Theorem). This is followed by the more global aspect: coherent sheaves and a finiteness theorem for their cohomology groups. Then follows a chapter on sheaves of differentials, dualizing sheaves, and Grothendieck's duality theory.

The first part ends with the theorem of Riemann-Roch and its application to the study of smooth projective curves over a field. Singular curves are treated through a detailed study of the Picard group. The second part starts with blowing-ups and desingularisation (embedded or not) of fibered surfaces over a Dedekind ring that leads on to intersection theory on arithmetic surfaces. Castelnuovo's criterion is proved and also the existence of the minimal regular model. This leads to the study of reduction of algebraic curves. The case of elliptic curves is studied in detail. The book concludes with the funadmental theorem of stable reduction of Deligne-Mumford. The book is essentially self-contained, including the necessary material on commutative algebra. The prerequisites are therefore few, and the book should suit a graduate student. It contains many examples and nearly 600 exercises.

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in detail. The book concludes with the fundamental theorem of stable reduction of Deligne-Mumford. This book is essentially self-contained, including the necessary material on commutative algebra. The prerequisites are few, and including many examples and approximately 600 exercises, the book is ideal for graduate students.

Extremely carefully written, masterfully thought out, and skillfully arranged introduction ... to the arithmetic of algebraic curves, on the one hand, and to the algebro-geometric aspects of number theory, on the other hand. ... an excellent guide for beginners in arithmetic geometry, just as an interesting reference and methodical inspiration

for teachers of the subject ... a highly welcome addition to the existing literature. --Zentralblatt MATH The interaction between number theory and algebraic geometry has been especially fruitful. In this volume, the author gives a unified presentation of some of the basic tools and concepts in number theory, commutative algebra, and algebraic geometry, and for the first time in a book at this level, brings out the deep analogies between them. The geometric viewpoint is stressed throughout the book. Extensive examples are given to illustrate each new concept, and many interesting exercises are given at the end of each chapter. Most of the important results in the one-dimensional case are proved, including Bombieri's proof of the Riemann Hypothesis for curves over a finite field. While the book is not intended to be an introduction to schemes, the author indicates how many of the

geometric notions introduced in the book relate to schemes, which will aid the reader who goes to the next level of this rich subject.

Conference proceedings based on the 1996 LMS Durham Symposium 'Galois representations in arithmetic algebraic geometry'.

An introduction to abstract algebraic geometry, with the only prerequisites being results from commutative algebra, which are stated as needed, and some elementary topology. More than 400 exercises distributed throughout the book offer specific examples as well as more specialised topics not treated in the main text, while three appendices present brief accounts of some areas of current research. This book can thus be used as textbook for an introductory

course in algebraic geometry following a basic graduate course in algebra. Robin Hartshorne studied algebraic geometry with Oscar Zariski and David Mumford at Harvard, and with J.-P. Serre and A. Grothendieck in Paris. He is the author of "Residues and Duality", "Foundations of Projective Geometry", "Ample Subvarieties of Algebraic Varieties", and numerous research titles.

The theory of elliptic curves is distinguished by its long history and by the diversity of the methods that have been used in its study. This book treats the arithmetic approach in its modern formulation, through the use of basic algebraic number theory and algebraic geometry. Following a brief discussion of the necessary algebro-geometric results, the book proceeds with an exposition of the geometry and the formal group of elliptic curves, elliptic curves

over finite fields, the complex numbers, local fields, and global fields. Final chapters deal with integral and rational points, including Siegels theorem and explicit computations for the curve Y = X + DX, while three appendices conclude the whole: Elliptic Curves in Characteristics 2 and 3, Group Cohomology, and an overview of more advanced topics.

????This book features recent developments in a rapidly growing area at the interface of higher-dimensional birational geometry and arithmetic geometry. It focuses on the geometry of spaces of rational curves, with an emphasis on applications to arithmetic questions. Classically, arithmetic is the study of rational or integral solutions of diophantine equations and geometry is the study of lines and conics. From the modern standpoint, arithmetic is the

study of rational and integral points on algebraic varieties over nonclosed fields. A major insight of the 20th century was that arithmetic properties of an algebraic variety are tightly linked to the geometry of rational curves on the variety and how they vary in families. This collection of solicited survey and research papers is intended to serve as an introduction for graduate students and researchers interested in entering the field, and as a source of reference for experts working on related problems. Topics that will be addressed include: birational properties such as rationality, unirationality, and rational connectedness, existence of rational curves in prescribed homology classes, cones of rational curves on rationally connected and Calabi-Yau varieties, as well as related questions within the framework of the Minimal Model Program.

Grothendieck's beautiful theory of schemes permeates modern algebraic geometry and underlies its applications to number theory, physics, and applied mathematics. This simple account of that theory emphasizes and explains the universal geometric concepts behind the definitions. In the book, concepts are illustrated with fundamental examples, and explicit calculations show how the constructions of scheme theory are carried out in practice.