

Géométrie algébrique

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Eli MAOR. — ***e: the story of a number***. — Un vol. broché, $15,5 \times 23,5$, de xiv, 227 p. — ISBN 0-691-05854-7. — Prix: US\$ 14.95. — Princeton University Press, Princeton, 1998.

The interest earned on a bank account, the arrangement of seeds in a sunflower, and the shape of the Gateway Arch in St. Louis are all intimately connected with the mysterious number e . In this informal and engaging history, Eli Maor portrays the curious characters and the elegant mathematics that lie behind the number. Designed for a reader with only a modest background in mathematics, this biography of e brings out that number's central importance in mathematics and illuminates a golden era in the age of science.

Richard A. MOLLIN. — **Fundamental number theory with applications**. — Discrete mathematics and its applications. — Un vol. relié, 16×24 , de xii, 439 p. — ISBN 0-8493-3987-1. — Prix: DM 135.00. — CRC Press, Boca Raton, Florida, distributed by Springer-Verlag, Berlin, 1998.

This title combines elementary number theory with algebraic number theory and applications such as those found in cryptology. Beginning with arithmetic of the rational integers and proceeding to an introduction of algebraic number theory via quadratic orders, this text reveals intriguing new applications of number theory. The text provides all of the material essential for an introduction to the fundamentals of number theory: presentation of applications to computer science and algebraic number theory via quadratics, applications to cryptography, solutions to odd-numbered problems, new factoring and primality testing algorithms.

Corps et polynômes

V.V. ISHKHANOV, B.B. LUR'E, D.K. FADDEEV. — **The embedding problem in Galois theory**. — Translations of mathematical monographs, vol. 165. — Un vol. relié, $18,5 \times 26$, de xi, 182 p. — ISBN 0-8218-4592-6. — Prix: £65.00. — American Mathematical Society, Providence R.I., distributed by Oxford University Press, Oxford, 1998.

Embedding theory was a common topic of Faddeev's lecture courses at St. Petersburg University. This book is based on these lectures and contains the main results on the embedding problem, which belong for the most part to the schools of Faddeev and Shafarevich. Chapter 1: Preliminary information about the embedding problem. — Chapter 2: The compatibility condition. — Chapter 3: The embedding problem with Abelian kernel. — Chapter 4: The embedding problem for local fields. — Chapter 5: The embedding problem with non-Abelian kernel for algebraic number fields.

Géométrie algébrique

Robert BIX. — **Conics and cubics: a concrete introduction to algebraic curves**. — Undergraduate texts in mathematics. — Un vol. relié, 16×24 , de x, 289 p. — ISBN 0-387-98401-1. — Prix: SFr. 89.50. — Springer, New York, 1998.

Conics and cubics is an accessible introduction to algebraic curves. Its focus on curves of degree at most three keeps results tangible and proofs transparent. Theorems follow naturally from high school algebra and two key ideas, homogeneous coordinates and intersection multiplicities. By classifying irreducible cubics over the real numbers and proving that their points form Abelian groups, the book gives readers easy access to the study of elliptic curves. It includes a simple proof of Bézout's theorem on the number of intersections of two curves.

David COX, John LITTLE, Donal O'SHEA. — **Using algebraic geometry**. — Graduate texts in mathematics, vol. 185. — Un vol. broché, $15,5 \times 23,5$, de XII, 499 p. — ISBN 0-387-98492-5. — Prix: DM 78.00. — Springer, New York, 1998.

In recent years, the discovery of new algorithms for dealing with polynomial equations, coupled with their implementation on fast inexpensive computers, has sparked a minor revolution in the study and practice of algebraic geometry. These algorithmic methods have also given rise to some new applications of algebraic geometry. This book illustrates the many uses of algebraic geometry, highlighting some of the more recent applications of Gröbner bases and resultants. In order to do this, the authors provide an introduction to some algebraic objects and techniques which are more advanced than one typically encounters in a first course, but nonetheless of great utility. The book assumes knowledge of the material covered in a standard undergraduate course in abstract algebra, and it would help to have some previous exposure to Gröbner bases. The book does not assume the reader is familiar with more advanced concepts such as modules.

Joe HARRIS, Ian MORRISON. — **Moduli of curves**. — Graduate texts in mathematics, vol. 187. — Un vol. broché, $16,5 \times 23,5$, de XIII, 366 p. — ISBN 0-387-98429-1. — Prix: DM 74.00. — Springer, New York, 1998.

This book provides a guide to a rich subject: algebraic curves and how they vary in families. The aim has been to provide a broad but compact overview of the field which will be accessible to readers with a modest background in algebraic geometry. After the exposition of the foundations, the book goes on to show how moduli spaces of curves are constructed, to illustrate typical applications with the proofs of the Brill-Noether and Gieseker-Petri theorems via limit linear series, and to survey the most important results about their geometry on topics ranging from irreducibility and complete subvarieties to ample divisors and Kodaira dimension.

János KOLLÁR, Shigefumi MORI, with the collaboration of C.H. CLEMENS, A. CORTI. — **Birational geometry of algebraic varieties**. — Cambridge tracts in mathematics, vol. 134. — Un vol. relié, $16 \times 23,5$, de VIII, 254 p. — ISBN 0-521-63277-3. — Prix: £ 30.00. — Cambridge University Press, Cambridge, 1998.

One of the major discoveries of the last two decades in algebraic geometry is the realization that the theory of minimal models of surfaces can be generalized to higher dimensional varieties. This generalization, called the minimal model program or Mori's program, has developed into a powerful tool with applications to diverse questions in algebraic geometry and beyond. The book provides the first comprehensive introduction to the circle of ideas developed around the program, the prerequisites being only a basic knowledge of algebraic geometry.

Peter E. NEWSTEAD, (Editor). — **Algebraic geometry**. — Papers presented for the EURO-PROJ conferences in Catania and Barcelona. — Lecture notes in pure and applied mathematics, vol. 200. — Un vol. broché, $18 \times 25,5$, de VIII, 405 p. — ISBN 0-8247-0234-4. — Prix: US\$ 165.00. — Marcel Dekker, Inc., New York, 1998.

In this compendium of original, refereed papers, leading international mathematicians communicate state-of-the-art research in algebraic geometry that emphasizes classification problems, in particular, studies on the structure of moduli spaces of vector bundles and the classification of curves and surfaces. The book furnishes topics such as: Brill-Noether theory, stability of multiplicities of plethysm, ruled surfaces and their blowups, Fourier-Mukai transform of coherent sheaves, Prym theta functions, Burchsnall-Chaundy theory and vector bundles, equivalence of m -Hilbert stability and slope stability, etc.

LOU VAN DEN DRIES. — **Tame topology and o-minimal structures.** — London Mathematical Society lecture note series, vol. 248. — Un vol. broché, $15,5 \times 23$, de x; 180 p. — ISBN 0-521-59838-9. — Prix: £24.95. — Cambridge University Press, Cambridge, 1998.

These notes give a self-contained treatment of the theory of o-minimal structures from a geometric and topological viewpoint, assuming only rudimentary algebra and analysis. The book starts with an introduction and overview of the subject. Later chapters cover the monotonicity theorem, cell decomposition, and the Euler characteristics in the o-minimal setting and show how these notions are easier to handle than in ordinary topology. The remarkable combinatorial property of o-minimal structures, the Vapnik-Chervonenkis property, is also covered.

Algèbre linéaire et multilinéaire, théorie des matrices

Jin Ho KWAK, Sungpyo HONG. — **Linear algebra.** — Un vol. relié, $17,5 \times 25$, de ix, 369 p. — ISBN 0-8176-3999-3. — Prix: SFr. 48.00. — Birkhäuser, Boston, 1997.

Linear algebra continues to be one of the most useful courses in undergraduate mathematics, science and engineering, and one of the essential tools for industrial scientists. The primary aim of this book is to give a clear and rigorous presentation of the basic concepts of linear algebra as a coherent part of mathematics. At the same time, by emphasizing computational skills along with mathematical abstractions, the authors illustrate linear algebra's power and usefulness in its applications to such other disciplines as physics, computer science, and economics. The book contains many important examples, explanations and problems right in the middle of the text.

Anneaux et algèbres

Paul E. BLAND. — **Topics in torsion theory.** — Mathematical research, vol. 103. — Un vol. broché, 17×24 , de 160 p. — ISBN 3-527-40131-8. — Prix: DM 128.00. — Wiley-VCH, Berlin, 1998.

The purpose of this book is to provide the reader with a quick introduction to torsion theory and to study selected properties of rings and modules in this setting. The material presented ranges from a torsion theoretical treatment of standard topics in ring and module theory to how previously untreated properties of rings and modules might be dealt with in this setting. The approach has been to develop the material so that classical results can be recovered by selecting an appropriate torsion theory. Torsion free covers are also studied and results are given which generalize well-known results on torsion free covers for modules (with usual torsion) over an integral domain.

Winfried BRUNS and Jürgen HERZOG. — **Cohen-Macaulay rings.** — Revised edition. — Cambridge studies in advanced mathematics, 39. — Un vol. broché, 15×23 , de xiv, 453 p. — ISBN 0-521-56674-6. — Prix: £24.95. — Cambridge University Press, Cambridge, 1998.

This book meets the need for a thorough, self-contained introduction to the homological and combinatorial aspects of the theory of Cohen-Macaulay rings, Gorenstein rings, local cohomology, and canonical modules. A separate chapter is devoted to Hilbert functions (including Macaulay's theorem) and numerical invariants derived from them. Throughout each chapter the authors have supplied many examples and exercises, which combined with the expository style, will make the book very useful for graduate courses in algebra. As the only modern, broad account of the subject, it will be essential reading for specialists as well.