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J. M. Aldous, R. J. Wilson, The Open University,
Milton Keynes, UK

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Discrete Mathematics is one of the fastest growing areas in mathematics today with an ever-increasing number of courses in schools and universities. Graphs and Applications is based on a highly successful Open University course and the authors have paid particular attention to the presentation, clarity and arrangement of the material, making it ideally suited for independent study and classroom use. Includes a large number of examples, problems and exercises.

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College Park, MD, USA

Chaos

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From the reviews ▶ *If you wanted an idea of the broad scope of classical mechanics, this is a good place to visit.* ▶ MathDL

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1st ed 1992. 2nd printing 2006. IV, 334 p. 272 illus. (Universitext) Softcover
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From the reviews ▶ *This book is a highly recommendable survey of mathematical tools and results in applied probability with special emphasis on queueing theory.... The second edition at hand is a thoroughly updated and considerably expended version of the first edition.... This book and the way the various topics are balanced are a welcome addition to the literature. It is an indispensable source of information for both advanced graduate students and researchers.* ▶ MATHEMATICAL REVIEWS

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M. Berger, Institut des Hautes Études Scientifiques Bures-sur-Yvette, France

A Panoramic View of Riemannian Geometry

This book introduces readers to the living topics of Riemannian Geometry and details the main results known to date. The results are stated without detailed proofs but the main ideas involved are described, affording the reader a sweeping panoramic view of almost the entirety of the field.

From the reviews ▶ *The book has intrinsic value for a student as well as for an experienced geometer. Additionally, it is really a compendium in Riemannian Geometry.* ▶ MATHEMATICAL REVIEWS

1st ed. 2003. Corr. 2nd printing 2003. XXIV, 826 p. 424 illus. Hardcover
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J. Boissonnat, M. Teillaud, INRIA Sophia-Antipolis, France (Eds.)

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2nd ed. 2006. XIV, 490 p. 52 illus. (Universitext) Softcover
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W. Bosma, Katholieke Universiteit Nijmegen, The Netherlands; J. Cannon, University of Sydney, NSW, Australia (Eds.)

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R. Bott, Harvard University, Cambridge, MA, USA;
L. W. Tu, Tufts University, Medford, MA, USA

Differential Forms in Algebraic Topology

Here is an informal introduction to some of the main ideas of contemporary homotopy and cohomology theory. The materials are structured around four core areas: de Rham theory, the Čech-de Rham complex, spectral sequences, and characteristic classes. By using the de Rham theory of differential forms as a prototype of cohomology, the machineries of algebraic topology are made easier to assimilate. This book is equally suitable for self-study and as a one-semester course in topology.

1st ed. 1982. Corr. 3rd printing 1995. XIV, 331 p. 92 illus. (Graduate Texts in Mathematics, Volume 82) Hardcover
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O. Bratteli, S. Neshveyev, University of Oslo, Norway; C. Skau, Norwegian University of Science and Technology, Trondheim, Norway (Eds.)

Operator Algebras

The Abel Symposium 2004

In the last 40 years, operator algebras have developed from a rather special discipline within functional analysis to become a central field in mathematics, which is often described as non-commutative geometry. It has branched out in several sub-disciplines and made contact with other subjects. The contributions to this volume give a state-of-the-art account of some of these sub-disciplines and the variety of topics reflect to some extent how the subject developed.

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M. Braun, City University of New York, Flushing, NY, USA

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4th ed. 1993. XVI, 578 p. 68 illus. (Texts in Applied Mathematics, Volume 11) Hardcover
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From the reviews ► *An interesting and original graduate text in topology and geometry...a good lecturer can use this text to create a fine course....A beginning graduate student can use this text to learn a great deal of mathematics.* ► MATHEMATICAL REVIEWS

1st ed. 1993. Corr. 3rd printing 1997. XIV, 557 p. 85 illus. (Graduate Texts in Mathematics, Volume 139) Hardcover
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Markov Chains

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This text is an introduction to the theory of stochastic processes at the undergraduate or beginning graduate level. Mathematical definitions, theorems, proofs, and a number of classroom examples help students to grasp the content of the main results, and problems of varying difficulty are proposed at the end of each chapter. It brings students to the borders of current research covering more advanced topics such as Martingales, eigenvalue, Gibbs fields and Monte Carlo techniques.

1st ed. 1999. Corr. 2nd printing 2001. XVIII, 444 p.
64 illus. (Texts in Applied Mathematics, Volume 31)
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Christchurch, New Zealand

Techniques of Constructive Analysis

This book is an introduction to constructive mathematics with an emphasis on techniques and results obtained in the last twenty years. The text covers fundamental theory of the real line and metric spaces, focusing on locatedness in normed spaces and with associated results about operators and their adjoints on a Hilbert space. The first appendix gathers together some basic notions about sets and orders, the second gives the axioms for intuitionistic logic.

2006. XVI, 216 p. 10 illus. (Universitext) Softcover
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J. Buchmann, Technische Universität Darmstadt,
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▶ ZENTRALBLATT MATH

2nd ed. 2004. XVI, 335 p. 27 illus. (Undergraduate Texts in Mathematics) Hardcover
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H. Bühlmann, ETH, Zürich, Switzerland; A. Gisler,
Winterthur Insurance Company, Winterthur, Switzerland

A Course in Credibility Theory and its Applications

This book is ideal for practicing experts in particular actuaries in the field of property-casualty insurance, life insurance, reinsurance and insurance supervision, as well as teachers and students. It provides an exploration of Credibility Theory, covering most aspects of this topic from the simplest case to the most detailed dynamic model. The book closely examines the tasks an actuary encounters daily: estimation of loss ratios, claim frequencies and claim sizes.

2005. XVIII, 336 p. 31 illus., 22 in color. (Universitext) Softcover
ISBN ▶ 978-3-540-25753-0

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H. Bühlmann

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▶ **A systematic and very readable book, which takes into account the most recent developments of the field. It will be of great interest to the actuary as well as to the statistician.** ▶ MATHEMATICAL REVIEWS

1st ed. 1970. 2nd printing 2005. XII, 210 p. (Grundlehren der mathematischen Wissenschaften, Volume 172) Hardcover
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1st ed. 2005. Corr. 2nd printing 2006. VI, 620 p. 99 illus. Hardcover
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C. J. Bushnell, King's College, London, UK;
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2006. XII, 354 p. (Grundlehren der mathematischen Wissenschaften, Volume 335) Hardcover
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R. Carmona, Princeton University, Princeton, NJ, USA; M. R. Tehranchi, University of Cambridge, UK

Interest Rate Models: an Infinite Dimensional Stochastic Analysis Perspective

This book presents the mathematical issues that arise in modeling the interest rate term structure by casting the interest-rate models as stochastic evolution equations in infinite dimensions. The text includes a crash course on interest rates, a self-contained introduction to infinite dimensional stochastic analysis, and recent results in interest rate theory.

From the reviews ▶ *A wonderful book. The authors present some cutting-edge math.*
▶ WWW.RISKBOOK.COM

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On Random Matrices, Zeta Functions, and Dynamical Systems

The relation between mathematics and physics has a long history, in which the role of number theory and of other more abstract parts of mathematics has recently become more prominent. More than 10 years after a first meeting between number theorists and physicists at the Centre de Physique des Houches, a second two-week event focused on the broader interface of number theory, geometry, and physics. This book collects the material presented at this meeting.

1st ed. 2005. Corr. 2nd printing 2006. XII, 640 p. 101 illus., 2 in color. Hardcover
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Global Aspects of Complex Geometry

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Written by established experts this book will be a must for mathematicians working in Complex Geometry

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2nd ed. 2001. Corr. 2nd printing 2004. 151 illus. (Undergraduate Texts in Mathematics) Hardcover
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C. Chicone, University of Missouri, Columbia, MO, USA

Ordinary Differential Equations with Applications

This introduction to the language of ODEs includes consideration of its origins and applications. Supplementary material provides connections between the theory and other advanced mathematical topics.

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▶ MATHEMATICAL REVIEWS

2nd ed. 2006. XX, 638 p. 73 illus. (Texts in Applied Mathematics, Volume 34) Hardcover
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J. Coates, University of Cambridge, UK; R. Sujatha, Tata Institute of Fundamental Research, Mumbai, India

Cyclotomic Fields and Zeta Values

Written by two leading workers in the field, this brief but elegant book presents in full detail the simplest proof of the "main conjecture" for cyclotomic fields. Its motivation stems not only from the inherent beauty of the subject, but also from the wider arithmetic interest of these questions.

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2006. X, 116 p. (Springer Monographs in Mathematics) Hardcover
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▶ STATISTICAL PAPERS

4th ed. 2003. XIII, 402 p. 114 illus., 57 in color. (Undergraduate Texts in Mathematics) Hardcover
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A Course in Computational Algebraic Number Theory

This book describes 148 algorithms which are essential for serious number-theoretic computations, in particular for computations related to lattices, algebraic number theory, elliptic curves, primality testing and factoring.

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1st ed. 1993. 4th printing 2000. XIX, 545 p. 1 illus. (Graduate Texts in Mathematics, Volume 138) Hardcover
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P. Collet, Ecole Polytechnique, Palaiseau, France;
J. P. Eckmann, University of Geneva, Switzerland

Concepts and Results in Chaotic Dynamics: A Short Course

The study of dynamical systems is a well established field. This book provides a panorama of several aspects of interest to mathematicians and physicists. It collects the material of several courses at the graduate level given by the authors, avoiding detailed proofs in exchange for numerous illustrations and examples. Apart from common subjects in this field, a lot of attention is given to questions of physical measurement and stochastic properties of chaotic dynamical systems.

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J. B. Conway, University of Tennessee, Knoxville, TN, USA

A Course in Functional Analysis

This book is an introductory text in functional analysis. Unlike many modern treatments, it begins with the particular and works its way to the more general.

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▶ MATHEMATICAL REVIEWS

2nd ed. 1990. Corr. 4th printing 1997. 1 illus. (Graduate Texts in Mathematics, Volume 96) Hardcover
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J. B. Conway, University of Tennessee, Knoxville, TN, USA

Functions of One Complex Variable I

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2nd ed. 1978. Corr. 7th printing 1995. (Graduate Texts in Mathematics, Volume 11) Hardcover
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This two-volume book is a modern introduction to the theory of numbers, emphasizing its connections with other branches of mathematics. Part A is accessible to first-year undergraduates and deals with elementary number theory. Part B is more advanced and gives the reader an idea of the scope of mathematics today. The connecting theme is the theory of numbers. By exploring its many connections with other branches a broad picture is obtained. The book contains a treasury of proofs.

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W. A. Coppel, Canberra, ACT, Australia

Number Theory

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This two-volume book is a modern introduction to the theory of numbers, emphasizing its connections with other branches of mathematics. Part A is accessible to first-year undergraduates and deals with elementary number theory. Part B is more advanced and gives the reader an idea of the scope of mathematics today. The connecting theme is the theory of numbers. By exploring its many connections with other branches a broad picture is obtained. The book contains a treasury of proofs.

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G. Cornell, University of Connecticut, Storrs, CT, USA;
J. H. Silverman, Brown University, Providence, RI,
USA; G. Stevens, University of Boston, MA, USA (Eds.)

Modular Forms and Fermat's Last Theorem

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R. Crandall, Center for Advanced Computation, Portland, OR, USA; C. Pomerance, Dartmouth College, Hanover, NH, USA

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▶ BULLETIN OF THE AMS

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4th ed. 1984. Corr. 7th printing 1999. X, 347 p. 37 illus. (Undergraduate Texts in Mathematics) Hardcover
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A Closer Look at Mathematics

This book, based on Pólya's method of problem solving, aids students in their transition to higher-level mathematics. It begins by providing a great deal of guidance on how to approach definitions, examples, and theorems in mathematics and ends by providing projects for independent study. Students will follow Pólya's four step process: learn to understand the problem; devise a plan to solve the problem; carry out that plan; and look back and check what the results told them.

2003. 408 p. 49 illus. (Undergraduate Texts in Mathematics) Hardcover
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C. M. Dafermos, Brown University, Providence, RI, USA

Hyperbolic Conservation Laws in Continuum Physics

This is a lucid and authoritative exposition of the mathematical theory of hyperbolic system laws. The second edition contains a new chapter recounting exciting recent developments on the vanishing viscosity method. Numerous new sections introduce newly derived results.

From the reviews ▶ *The author is known as one of the leading experts in the field. His masterly written book is, surely, the most complete exposition in the subject of conservations laws.*

▶ Zentralblatt MATH

2nd ed. 2005. XIX, 626 p. 39 illus. (Grundlehren der mathematischen Wissenschaften, Volume 325) Hardcover
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G. Da Prato, Scuola Normale Superiore, Pisa, Italy

An Introduction to Infinite-Dimensional Analysis

Based on well-known lectures given at Scuola Normale Superiore in Pisa, this book introduces analysis in a separable Hilbert space of infinite dimension. It starts from the definition of Gaussian measures in Hilbert spaces, concepts such as the Cameron-Martin formula, Brownian motion and Wiener integral are introduced in a simple way. These concepts are then used to illustrate basic stochastic dynamical systems and Markov semi-groups, paying attention to their long-time behavior.

2006. X, 214 p. (Universitext) Softcover
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R. Dautray, Paris, France; J. Lions, College de France, Paris, France

Mathematical Analysis and Numerical Methods for Science and Technology

Volume 6: Evolution Problems II

Revised by: I. Sneddon **Transl. French:** A. Craig **With contrib. by:** C. Bardos, M. Cessenat, A. Kavenoky, P. Lascaux, B. Mercier, O. Pironneau, B. Scheurer, R. Sentis

These six volumes--the result of a ten year collaboration between two distinguished international figures--compile the mathematical knowledge required by researchers in mechanics, physics, engineering, chemistry and other branches of application of mathematics for the theoretical and numerical resolution of physical models on computers. It is a comprehensive and up-to-date publication that presents the mathematical tools needed in applications of mathematics.

1st ed. 1993. 2nd printing 2000. XII, 588 p. 33 illus. Softcover
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W. Decker, Universität des Saarlandes, Saarbrücken, Germany; C. Lossen, Technische Universität Kaiserslautern, Germany

Computing in Algebraic Geometry

A Quick Start using SINGULAR

This book provides a quick access to computational tools for algebraic geometry, the mathematical discipline which handles solution sets of polynomial equations. Originating from a number of intense one week schools taught by the authors, the text is designed so as to provide a step by step introduction which enables the reader to get started with his own computational experiments right away. The authors present the basic concepts and ideas in a compact way.

2006. XVI, 327 p. (Algorithms and Computation in Mathematics, Volume 16) Hardcover
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F. Delbaen, ETH Zürich, Switzerland; W. Schachermayer, Technische Universität Wien, Austria

The Mathematics of Arbitrage

This book presents a rigorous mathematical treatment of the theory of pricing and hedging of derivative securities by the principle of no arbitrage. The first part presents a relatively elementary introduction. The second part consists of an updated edition of seven papers, which analyzes the topic in the general framework of semi-martingale theory.

From the reviews ▶ *Will be of invaluable help to new researchers in the area of incomplete markets.*

▶ MATHEMATICAL REVIEWS

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J. Dereziński, Warsaw University, Warsaw, Poland; H. Siedentop, Ludwig-Maximilians Universität München, Germany (Eds.)

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2006. IX, 327 p. 22 illus. With online files/update. (Lecture Notes in Physics, Volume 695) Hardcover
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Affine Invariance and Adaptive Algorithms

This book deals with the efficient numerical solution of challenging nonlinear problems in science and engineering, both in finite and in infinite dimension. Its focus is on local and global Newton methods for direct problems or Gauss-Newton methods for inverse problems. Lots of numerical illustrations, comparison tables, and exercises make the text useful in computational mathematics classes. At the same time, the book opens many directions for possible future research.

1st ed. 2004. Corr. 2nd printing 2006. XII, 424 p. 48 illus. (Springer Series in Computational Mathematics, Volume 35) Hardcover
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3rd ed. 2006. XVI, 415 p. 146 illus. (Graduate Texts in Mathematics, Volume 173) Softcover
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The third edition of this standard textbook of modern graph theory has been carefully revised, updated, and substantially extended. Covering all its major recent developments, Graph Theory can be used both as a reliable textbook for an introductory course and as a graduate text: on each topic it covers all the basic material in full detail, and adds one or two deeper results (again with detailed proofs) to illustrate the more advanced methods of that field.

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Ding-Zhu Du, Dept. of Computer Science, University of Minnesota, Minneapolis, USA; P. Pardalos, Dept. of Industrial and Systems Engineering, University of Florida, Gainesville, USA; Weili Wu, Dept. of Computer Science, University of Texas at Dallas, USA

Mathematical Theory of Optimization

This book provides an introduction to the mathematical theory of optimization. It emphasizes the convergence theory of nonlinear optimization algorithms and applications of nonlinear optimization to combinatorial optimization. Mathematical Theory of Optimization includes recent developments in global convergence, the Powell conjecture, semidefinite programming, and relaxation techniques for designs of approximation solutions of combinatorial optimization problems.

2001. 288 p. (Nonconvex Optimization and Its Applications, Volume 56) Hardcover
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2006. XIV, 746 p. 200 illus. (Problem Books in Mathematics) Hardcover
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Metaheuristics for Hard Optimization

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A metaheuristic is a set of concepts that can be used to define heuristic methods that can be applied to a wide set of different problems. This volume presents a family of advanced methods of optimization called metaheuristics. This category covers simulated annealing, tabu search, evolutionary and genetic algorithms, and ant colonies. The book contains various case studies from engineering and operations research, and includes commented literature for each chapter.

2006. XII, 369 p. 140 illus. Hardcover
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J. Dugundji, A. Granas, Université de Montréal, QC, Canada

Fixed Point Theory

The theory of Fixed Points is one of the most powerful tools of modern mathematics. This book contains a clear, detailed and well-organized presentation of the major results, together with an entertaining set of historical notes and an extensive bibliography describing further developments and applications.

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► MATHEMATICAL REVIEWS

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F. Dumortier, Hasselt University, Diepenbeek, Belgium; J. Llibre, J. C. Artés, Universitat Autònoma de Barcelona, Bellaterra, Spain

Qualitative Theory of Planar Differential Systems

This book deals with systems of polynomial autonomous ordinary differential equations in two real variables. The emphasis is mainly qualitative, although attention is also given to more algebraic aspects as a thorough study of the center/focus problem and recent results on integrability. In the last two chapters the performant software tool P4 is introduced. From the start, differential systems are represented by vector fields enabling a dynamical systems approach.

2006. XVI, 302 p. 123 illus. (Universitext) Softcover
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D. R. Durran, University of Washington, Seattle, WA, USA

Numerical Methods for Fluid Dynamics

with Applications in Geophysics

Covering a wide range of techniques, this book describes methods for the solution of partial differential equations which govern wave propagation and are used in modeling atmospheric and oceanic flows. The presentation establishes a concrete link between theory and practice.

1998. XVII, 465 p. 93 illus. (Texts in Applied Mathematics, Volume 32) Hardcover
ISBN ► 978-0-387-98376-9

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P. Dyke, University of Plymouth, UK

An Introduction to Laplace Transforms and Fourier Series

This introduction to Laplace transforms and Fourier series is aimed at second year students in applied mathematics. It is unusual in treating Laplace transforms at a relatively simple level with many examples. Mathematics students do not usually meet this material until later in their degree course but applied mathematicians and engineers need an early introduction. Suitable as a course text, it will also be of interest to physicists and engineers as supplementary material.

1st ed. 2000. Corr. 2nd printing 2000. XII, 250 p. (Springer Undergraduate Mathematics Series) Softcover
ISBN ► 978-1-85233-015-6

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H. Ebbinghaus, J. Flum, University of Freiburg, Germany; W. Thomas, University of Kiel, Germany

Mathematical Logic

This introduction to first-order logic clearly works out the role of first-order logic in the foundations of mathematics, particularly the two basic questions of the range of the axiomatic method and of theorem-proving by machines. It covers several advanced topics not commonly treated in introductory texts, such as Fraïssé's characterization of elementary equivalence, Lindström's theorem on the maximality of first-order logic, and the fundamentals of logic programming.

2nd ed. 1994. Corr. 2nd printing 1996. 13 illus. (Undergraduate Texts in Mathematics) Hardcover
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P. Embrechts, ETH Zürich, Switzerland; C. Klüppelberg, Technische Universität München, Germany; T. Mikosch, University of Copenhagen, Denmark

Modelling Extremal Events for Insurance and Finance

From the reviews ► *A reader's first impression on leafing through this book is of the large number of graphs and diagrams, used to illustrate shapes of distributions...and to show real data examples in various ways. A closer reading reveals a nice mix of theory and applications, with the copious graphical illustrations alluded to. Such a mixture is of course dear to the heart of the applied probabilist/statistician, and should impress even the most ardent theorists.* ► MATHEMATICAL REVIEWS

1st ed. 1997. Corr. 4th printing 2008. XV, 648 p. 100 illus. (Stochastic Modelling and Applied Probability, Volume 33) Hardcover
ISBN ► 978-3-540-60931-5

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K. Engel, Faculty of Engineering, University of L'Aquila, Italy; **R. Nagel**, University of Tübingen, Germany

A Short Course on Operator Semigroups

This book offers a direct introduction to the theory of one-parameter semigroups of linear operators on Banach spaces. It contains the fundamental results of the theory such as the Hille-Yoshida generation theorem, the bounded perturbation theorem, and the Trotter-Kato approximation theorem. It also treats the spectral theory of semigroups and its consequences for the qualitative behavior. It is ideal for students and researchers who want to become acquainted with semigroups.

2006. XII, 247 p. 3 illus. (Universitext) Hardcover
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K. Eriksson, Chalmers University of Technology, Göteborg, Sweden; **D. Estep**, Colorado State University, Fort Collins, CO, USA; **C. Johnson**, Chalmers University of Technology, Göteborg, Sweden

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Applied Mathematics: Body & Soul is a mathematics education reform project developed at Chalmers University of Technology and includes a series of volumes and software. The program is motivated by the computer revolution opening new possibilities of computational mathematical modeling. It consists of a synthesis of Mathematical Analysis (Soul), Numerical Computation (Body) and Application. Volumes I-III present a modern version of Calculus and Linear Algebra.

2004. XLIV, 426 p. Hardcover
ISBN ► 978-3-540-00890-3

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K. Eriksson, Chalmers University of Technology, Göteborg, Sweden; **D. Estep**, Colorado State University, Fort Collins, CO, USA; **C. Johnson**, Chalmers University of Technology, Göteborg, Sweden

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2004. XLIV, 360 p. Hardcover
ISBN ► 978-3-540-00889-7

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G. Everest, T. Ward, University of East Anglia, Norwich, UK

An Introduction to Number Theory

This book provides an introduction to the main streams of number theory. Starting with the unique factorization property of the integers, the theme of factorization is revisited several times throughout the book to illustrate how the ideas handed down from Euclid continue to reverberate through the subject. In particular, the book shows how the Fundamental Theorem of Arithmetic, handed down from antiquity, informs much of the teaching of modern number theory.

1st ed. 2005. Corr. 2nd printing 2005. X, 302 p. 16 illus. (Graduate Texts in Mathematics, Volume 232) Hardcover
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C. P. Fall, University of New York, NY, USA; **E. S. Marland**, Appalachian State University, Boone, NC, USA; **J. M. Wagner**, University of Connecticut Health Center, Farmington, CT, USA; **J. J. Tyson**, Virginia Polytechnic Institute & State University, Blacksburg, VA, USA (Eds.)

Computational Cell Biology

This textbook provides an introduction to dynamic modeling in molecular cell biology, taking a computational and intuitive approach. Detailed illustrations, examples, and exercises are included throughout the text. Appendices containing mathematical and computational techniques are provided as a reference tool.

From the reviews ► *Remarkable for its pedagogical clarity....Another strength of the book is to provide examples of the comprehensive modelling.*

► BIOINFORMATICS

1st ed 2002. Corr. 3rd printing 2004. XX, 468 p. 210 illus. (Interdisciplinary Applied Mathematics, Volume 20) Hardcover
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C. Faure, A. Frölicher, Section de Mathématiques, Université de Genève, Switzerland

Modern Projective Geometry

This monograph develops projective geometries and provides a systematic treatment of morphisms. It introduces a new fundamental theorem and its applications describing morphisms of projective geometries in homogeneous coordinates by semilinear maps. Other topics treated include three equivalent definitions of projective geometries and their correspondence with certain lattices; quotients of projective geometries and isomorphism theorems; and recent results in dimension theory.

2000. 384 p. (Mathematics and Its Applications, Volume 521) Hardcover
ISBN ► 978-0-7923-6525-9

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V. Feoktistov, Nimes, France

Differential Evolution

In Search of Solutions

Individuals and enterprises are looking for optimal solutions for the problems they face. Most problems can be expressed in mathematical terms, and so the methods of optimization render a significant aid. This book details the latest achievements in optimization. It offers comprehensive coverage on Differential Evolution, presenting revolutionary ideas in population-based optimization and shows the best known metaheuristics through the prism of Differential Evolution.

2006. XII, 196 p. 73 illus. (Springer Optimization and Its Applications, Volume 5) Hardcover
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W. H. Fleming, Brown University, Providence, RI, USA;
H. Soner, Koc University, Istanbul, Turkey

Controlled Markov Processes and Viscosity Solutions

This book is an introduction to optimal stochastic control for continuous time Markov processes and the theory of viscosity solutions. It covers dynamic programming for deterministic optimal control problems, as well as to the corresponding theory of viscosity solutions. New chapters in this second edition introduce the role of stochastic optimal control in portfolio optimization and in pricing derivatives in incomplete markets and two-controller, zero-sum differential games.

2nd ed. 2006. XVII, 429 p. (Stochastic Modelling and Applied Probability, Volume 25) Hardcover
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O. Forster, University of Munich, Germany

Lectures on Riemann Surfaces

This book grew out of lectures on Riemann surfaces given by Otto Forster at the universities of Munich, Regensburg, and Münster. It provides a concise modern introduction to this rewarding subject, as well as presenting methods used in the study of complex manifolds in the special case of complex dimension one.

From the reviews ▶ *This book deserves very serious consideration as a text for anyone contemplating giving a course on Riemann surfaces.* ▶ MATHEMATICAL REVIEWS

1st ed. 1981. Corr. 4th printing 1999. VIII, 254 p. 6 illus. (Graduate Texts in Mathematics, Volume 81) Hardcover
ISBN ▶ 978-0-387-90617-1

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Complex Analysis

This indispensable book provides an extensive description of classical complex analysis. The authors begin with an introduction to complex analysis that presents the fundamental results, followed by elliptic functions and elliptic modular functions. The book is rounded by excursions to analytic number theory. Great importance is attached to completeness in the sense that all needed notions are developed. More than 400 exercises with hints for solutions are included.

2005. X, 552 p. 112 illus., 2 in color. (Universitext) Softcover
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This book explores the theory and application of locally nilpotent derivations. It provides a unified treatment of the subject, beginning with sixteen First Principles on which the entire theory is based. These are used to establish classical results, such as Rentschler's Theorem for the plane, right up to the most recent results, such as Makar-Limanov's Theorem for locally nilpotent derivations of polynomial rings. The book also includes a wealth of pexamples and open problems.

2006. XI, 261 p. 4 illus. (Encyclopaedia of Mathematical Sciences, Volume 136) Hardcover
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E. M. Friedlander, Northwestern University, Evanston, IL, USA; D. R. Grayson, University of Illinois at Urbana-Champaign, Urbana, USA (Eds.)

Handbook of K-Theory

This handbook offers a compilation of techniques and results in K-theory. Each chapter is dedicated to a specific topic and is written by a leading expert. Many chapters present historical background; some present previously unpublished results, whereas some present the first expository account of a topic; many discuss future directions as well as open problems. It offers an exposition of our current state of knowledge as well as an implicit blueprint for future research.

2005. XXIV, 1163 p. Hardcover
ISBN ▶ 978-3-540-23019-9

List price

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W. Fulton, University of Chicago, IL, USA

Algebraic Topology

A First Course

This book introduces the important ideas of algebraic topology emphasizing the relation of these ideas with other areas of mathematics. It presents concrete problems in spaces with a few dimensions.

From the reviews ► *A text on algebraic topology which is genuinely different from the existing texts....The author, who is an expert in algebraic geometry, has given us his own personal idiosyncratic vision of how the subject should be developed.* ► AMERICAN MATHEMATICAL MONTHLY

1st ed. 1995. Corr. 2nd printing 1997. XVIII, 430 p. 124 illus. (Graduate Texts in Mathematics, Volume 153) Softcover
ISBN ► 978-0-387-94327-5

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T. W. Gamelin, Department of Mathematics UCLA, Los Angeles, CA, USA

Complex Analysis

The book provides an introduction to complex analysis for readers with some very basic familiarity with complex numbers.

From the reviews ► *This is a wonderful book about the fundamentals of complex analysis. It touches all essential parts of complex function theory, and very often goes deeper into the subject than most elementary texts....All in all, this is one of the best if not the best book on the elementary theory of complex functions.* ► MATHEMATICAL REVIEWS

1st ed. 2001. Corr. 2nd printing 2003. XVIII, 478 p. 184 illus. (Undergraduate Texts in Mathematics) Softcover
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S. R. Ghorpade, B. V. Limaye, Indian Institute of Technology, Bombay, India

A Course in Calculus and Real Analysis

This book provides a self-contained and rigorous introduction to calculus of functions of one variable, in a presentation which emphasizes the structural development of calculus. Throughout, the authors highlight the fact that calculus provides a firm foundation to concepts and results that are generally encountered in high school and accepted on faith; for example, the classical result that the ratio of circumference to diameter is the same for all circles.

2006. X, 432 p. 71 illus. (Undergraduate Texts in Mathematics) Hardcover
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F. W. Glover, University of Colorado, Boulder, USA;

G. A. Kochenberger, University of Colorado at Denver, USA (Eds.)

Handbook of Metaheuristics

This book provides both the research and practitioner communities with a comprehensive coverage of the metaheuristic methodologies that have proven to be successful in a wide variety of real-world problem settings. Moreover, it is these metaheuristic strategies that hold particular promise for success in the future. The various chapters serve as stand alone presentations giving both the necessary background underpinnings as well as practical guides for implementation.

2003. 570 p. (International Series in Operations Research & Management Science, Volume 57) Hardcover
ISBN ► 978-1-4020-7263-5

List price

► € 183,00 | £120.00

► * € (D) 195,81 | € (A) 201,30 | sFr 300,00

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C. Godsil, University of Waterloo, ON, Canada;

G. Royle, University of Western Australia, Nedlands, WA, Australia

Algebraic Graph Theory

Algebraic graph theory is a combination of two strands: the study of algebraic objects associated with graphs and the use of tools from algebra to derive properties of graphs. This book presents and illustrates the tools and ideas of algebraic graph theory, with an emphasis on current rather than classical topics.

From the reviews ► *This new text is a welcome addition to the literature, being beautifully written and wide-ranging in its coverage.* ► MATHEMATICAL REVIEWS

2001. XIX, 439 p. 120 illus. (Graduate Texts in Mathematics, Volume 207) Softcover
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► * € (D) 42,75 | € (A) 43,95 | sFr 70,00

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D. Goldschmidt, IDA Center for Communications Research, Princeton, NJ, USA

Algebraic Functions and Projective Curves

This book gives an introduction to algebraic functions and projective curves. It covers a wide range of material by dispensing with the machinery of algebraic geometry and proceeding directly via valuation theory to the main results on function fields. It also develops the theory of singular curves by studying maps to projective space, including topics such as Weierstrass points in characteristic p , and the Gorenstein relations for singularities of plane curves.

2003. XVI, 179 p. (Graduate Texts in Mathematics, Volume 215) Hardcover
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F. Q. Gouvea, Colby College, Waterville, ME, USA

p-adic Numbers

An Introduction

There are numbers of all kinds: rational, real, complex, p-adic. The p-adic numbers are less well known than the others, but they play a fundamental role in number theory and in other parts of mathematics. This elementary introduction offers a broad understanding of p-adic numbers.

From the reviews ▶ *It is perhaps the most suitable text for beginners, and I shall definitely recommend it to anyone who asks me what a p-adic number is.* ▶ THE MATHEMATICAL GAZETTE

2nd ed. 1997. Corr. 3rd printing 2003. VI, 302 p. 15 illus. (Universitext) Softcover
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The Random-Cluster Model

The random-cluster model has emerged as a key tool in the mathematical study of ferromagnetism. It may be viewed as an extension of percolation to include Ising and Potts models, and its analysis is a mix of arguments from probability and geometry. The Random-Cluster Model contains accounts of the subcritical and supercritical phases, together with clear statements of important open problems. The book includes treatment of the first-order (discontinuous) phase transition.

2006. XIV, 380 p. 37 illus. (Grundlehren der mathematischen Wissenschaften, Volume 333) Hardcover
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M. Gross, University of Warwick, UK; D. Huybrechts, Université Paris 7 Denis Diderot, France; D. Joyce, Lincoln College, Oxford, UK; G. Ellingsrud, University of Oslo, Norway; L. Olson, University of Tromsø, Norway; K. Ranestad, University of Oslo, Norway; S. A. Stromme, University of Bergen, Norway (Eds.)

Calabi-Yau Manifolds and Related Geometries

Lectures at a Summer School in Nordfjordeid, Norway, June, 2001

This is an introduction to a very active field of research, on the boundary between mathematics and physics. It is aimed at graduate students and researchers in geometry and string theory. Proofs or sketches are given for many important results.

From the reviews ▶ *An excellent introduction to current research in the geometry of Calabi-Yau manifolds, hyper-Kähler manifolds, exceptional holonomy and mirror symmetry....This is an excellent and useful book.* ▶ MATHEMATICAL REVIEWS

2003. VIII, 239 p. (Universitext) Softcover
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J. Guckenheimer, Cornell University, Ithaca, NY, USA; P. Holmes, University of Princeton, NJ, USA

Nonlinear Oscillations, Dynamical Systems, and Bifurcations of Vector Fields

This book applies the techniques of dynamical systems and bifurcation theories to the study of nonlinear oscillations. Numerous exercises convey the important analytical underpinnings of problems in dynamical systems and help the reader develop an intuitive feel for the properties involved.

From the reviews ▶ *The book is rewarding reading....Its excellent survey of the mathematical literature makes it a valuable reference.*
▶ JOURNAL OF STATISTICAL PHYSICS

1st ed. 1983. Corr. 6th printing 2002. 206 illus. (Applied Mathematical Sciences, Vol. 42) Hardcover
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M. Gundlach, Aareal Bank AG, Wiesbaden, Germany; F. Lehrbass, Deutsche Genossenschafts-Hypothekbank AG, Hamburg, Germany (Eds.)

CreditRisk+ in the Banking Industry

CreditRisk+ is a widely implemented default-mode model of portfolio credit risk, based on a methodology borrowed from actuarial mathematics. This book gives an account of the status quo as well as of new and recent developments of the credit risk model CreditRisk+, which is widely used in the banking industry. It gives an introduction to the model itself and to its ability to describe, manage and price credit risk. This timely book will be an indispensable tool.

2004. XII, 369 p. (Springer Finance) Hardcover
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Mathematical Concepts of Quantum Mechanics

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From the reviews ▶ *This book is an introduction to the mathematics of quantum mechanics....The strength of the book is where it shows how the mathematical treatment of quantum mechanics brings insights to physics....It will be useful to the experienced reader as a guide to the impressive recent advances in mathematical quantum mechanics.* ▶ SIAM REVIEW

1st ed. 2003. Enlarged 2nd printing 2006. XI, 290 p. 37 illus. (Universitext) Softcover
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Extreme Value Theory

An Introduction

This treatment of extreme value theory is unique in that it focuses on some beautiful theoretical results along with applications. All the main topics covering the heart of the subject are introduced to the reader in a systematic fashion. Key to the presentation is the concentration on the probabilistic and statistical aspects of extreme values. The work is an excellent introduction to extreme value theory at the graduate level, requiring only some mathematical maturity.

2006. XVIII, 418 p. 18 illus. (Springer Series in Operations Research and Financial Engineering) Hardcover ISBN ▶ 978-0-387-23946-0

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Structure-Preserving Algorithms for Ordinary Differential Equations

This book covers numerical methods that preserve properties of Hamiltonian systems, reversible systems, differential equations on manifolds and problems with highly oscillatory solutions. It presents a theory of symplectic and symmetric methods, which include various specially designed integrators, as well as discusses their construction and practical merits. The long-time behavior of the numerical solutions is studied using a backward error analysis combined with KAM theory.

2nd ed. 2006. XVII, 644 p. 153 illus. (Springer Series in Computational Mathematics, Volume 31) Hardcover ISBN ▶ 978-3-540-30663-4

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Stiff and Differential-Algebraic Problems

The subject of this book is the solution of stiff differential equations and of differential-algebraic systems. This second edition contains new material including new numerical tests, recent progress in numerical differential-algebraic equations, and improved FORTRAN codes.

From the reviews ▶ *A superb book...Throughout, illuminating graphics, sketches and quotes from papers of researchers in the field add an element of easy informality and motivate the text.*

▶ MATHEMATICS TODAY

2nd rev. ed. 1996. 3rd printing 2004. XVI, 614 p. 137 illus. (Springer Series in Computational Mathematics, Volume 14) Hardcover ISBN ▶ 978-3-540-60452-5

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Lie Groups, Lie Algebras, and Representations

An Elementary Introduction

This book addresses Lie groups, Lie algebras, and representation theory. The author restricts attention to matrix Lie groups and Lie algebras. This approach keeps the discussion concrete, allows the reader to get to the heart of the subject quickly, and covers all of the most interesting examples.

From the reviews ▶ *Sure to become a standard textbook for graduate students in mathematics and physics with little or no prior exposure to Lie theory.* ▶ L'Enseignement Mathematique

1st ed. 2003. Corr. 2nd printing 2004. XVII, 351 p. 38 illus., 7 in color. (Graduate Texts in Mathematics, Volume 222) Hardcover ISBN ▶ 978-0-387-40122-5

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P. Halmos

Finite-Dimensional Vector Spaces

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▶ ZENTRALBLATT FÜR MATHEMATIK

1st ed. 1974. 5th printing 1993. (Undergraduate Texts in Mathematics) Hardcover ISBN ▶ 978-0-387-90093-3

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Measure Theory

Useful as a text for students and a reference for the more advanced mathematician, this book presents a unified treatment of that part of measure theory most useful for its application in modern analysis. Coverage includes sets and classes, measures and outer measures, Haar measure and measure and topology in groups.

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1st ed. 1974. 2nd printing 1974. XI, 304 p. (Graduate Texts in Mathematics, Volume 18) Hardcover ISBN ▶ 978-0-387-90088-9

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P. R. Halmos, Santa Clara University, CA, USA

Naive Set Theory

From the reviews ▶ *[The author] uses the language and notation of ordinary informal mathematics to state the basic set-theoretic facts which a beginning student of advanced mathematics needs to know... the book is eminently suited for use as a textbook or for self-study. The reader should derive from this volume a maximum of understanding of the theorems of set theory and of their basic importance in the study of mathematics.* ▶ PHILOSOPHY AND PHENOMENOLOGICAL RESEARCH

1974. VII, 104 p. (Undergraduate Texts in Mathematics) Hardcover
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J. Harris, Harvard University, Cambridge, MA, USA

Algebraic Geometry

A First Course

From the reviews ▶ *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

1st ed. 1992. Corr. 3rd printing 1995. XIX, 328 p. 83 illus. (Graduate Texts in Mathematics, Volume 133) Hardcover
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R. Hartshorne, University of California, Berkeley, CA, USA

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This book provides an introduction to abstract algebraic geometry. It includes more than 400 exercises that offer specific examples as well as more specialized topics.

From the reviews ▶ *Enables the reader to make the drastic transition between the basic, intuitive questions about affine and projective varieties with which the subject begins, and the elaborate general methodology of schemes and cohomology employed currently to answer these questions.*

▶ MATHEMATICAL REVIEWS

1st ed. 1977. Corr. 8th printing 1997. 25 illus. (Graduate Texts in Mathematics, Volume 52) Hardcover
ISBN ▶ 978-0-387-90244-9

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Geometry: Euclid and Beyond

This book offers a unique opportunity to understand the essence of one of the great thinkers of western civilization. A guided reading of Euclid's Elements leads to a critical discussion and rigorous modern treatment of Euclid's geometry and its more recent descendants, with complete proofs. Topics include the introduction of coordinates, the theory of area, history of the parallel postulate, the various non-Euclidean geometries, and the regular and semi-regular polyhedra.

1st ed. 2000. Corr. 4th printing 2005. XII, 532 p. 550 illus. (Undergraduate Texts in Mathematics) Hardcover
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R. Hersh, University of New Mexico, Albuquerque, NM, USA (Ed.)

18 Unconventional Essays on the Nature of Mathematics

This book collects some of the most interesting recent writings tackling the problem of giving an account of the nature, purpose, and justification of mathematics as actually done by real live mathematicians.

From the reviews ▶ *Will become a classic for the coming generations of mathematics philosophers as well as for mathematics educators interested in changing dominant conceptions of what is mathematics, finally!* ▶ Zentralblatt für Didaktik der Mathematik

2006. XXI, 326 p. 10 illus. Softcover
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1st ed. 1965. 3rd printing 1975. 492 p. (Graduate Texts in Mathematics, Volume 25) Hardcover
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P. Hilton, State University of New York, Binghamton, NY, USA; **D. Holton**, University of Otago, Dunedin, New Zealand; **J. Pedersen**, University of Santa Clara, CA, USA

Mathematical Vistas

From a Room with Many Windows

This book collects nine related mathematical essays which will intrigue and inform.

From the reviews ► *The authors put their writing where their talents are, and students get to see just how alive mathematics is...there is much to commend the book. It contains plenty of interesting mathematics, often going in unusual directions. I like the diagrams; the authors have chosen mathematics that involves especially pretty ones.* ► THE MATHEMATICAL ASSOCIATION OF AMERICA

2002. XIV, 335 p. 158 illus. (Undergraduate Texts in Mathematics) Hardcover
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1st ed. 1976. Corr. 6th printing 1997. X, 222 p. 40 illus. (Graduate Texts in Mathematics, Volume 33) Hardcover
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Ø. Hjelle, Simula Research Laboratory, Lysaker, Norway; **M. Dæhlen**, University of Oslo, Norway

Triangulations and Applications

This book will serve as a valuable source of information about triangulations for the graduate student and researcher. With emphasis on computational issues, it presents the basic theory necessary to construct and manipulate triangulations. In particular, the book gives a tour through the theory behind the Delaunay triangulation, including algorithms and software issues. It also discusses various data structures used for the representation of triangulations.

2006. XI, 234 p. 126 illus., 5 in color. (Mathematics and Visualization) Hardcover
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This second edition provides an introduction to mathematical modeling in the areas of medicine and the life sciences. The wide diversity of applications presented range from population phenomena of genetics, epidemics and dispersal to physiological processes, including circulation, cell volume, muscle mechanics and neural control. Throughout, illustrations depict physiological processes, population biology phenomena, corresponding models, and the results of computer simulations.

2nd ed. 2001. Corr. 2nd printing 2004. XIV, 354 p. 71 illus. (Texts in Applied Mathematics, Volume 10) Hardcover
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Introduction to Lie Algebras and Representation Theory

This book introduces the theory of semisimple Lie algebras over an algebraically closed field of characteristic 0, with emphasis on representations. This text grew out of lectures which the author gave at the N.S.F. Advanced Science Seminar on Algebraic Groups at Bowdoin College in 1968.

From the reviews ► *Exceptionally well written and ideally suited either for independent reading or as a text for an introduction to Lie algebras and their representations.* ► MATHEMATICAL REVIEWS

1st ed. 1972. Corr. 7th printing 1997. XII, 173 p. 7 illus. (Graduate Texts in Mathematics, Volume 9) Hardcover
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Inverse Problems for Partial Differential Equations

Since the first publication of this book, the rapidly progressing field of inverse problems witnessed new developments. This book reflects these changes and describes the state of the theory and some numerical aspects of inverse problems in partial differential equations. Currently, there are hundreds of publications containing new and interesting results on inverse problems. This book successfully collects and presents many of them in a readable and informative form.

2nd ed. 2006. XII, 262 p. (Applied Mathematical Sciences, Volume 127) Hardcover
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This textbook provides a general overview of realistic mathematical models in life sciences, considering both deterministic and stochastic models and covering dynamical systems, game theory, stochastic processes, and statistical methods. Each mathematical model is explained and illustrated individually with an appropriate biological example. In addition, the book includes three appendices on ordinary differential equations, evolution equations, and probability.

2005. VII, 164 p. 2 illus. (Universitext) Softcover
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5th ed. 1992. 560 p. Softcover
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T. Jech, Mathematical Institute of the Academy of Sciences of Czech Republic

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From the reviews ► *One of the classical textbooks and reference books in set theory...The present 'Third Millennium' edition...is a whole new book. In three parts the author offers us what in his view every young set theorist should learn and master... This well-written book promises to influence the next generation of set theorists, much as its predecessor has done.* ► MATHEMATICAL REVIEWS

3rd rev. ed. Corr. 4th printing 2006. XIV, 772 p. (Springer Monographs in Mathematics) Hardcover
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Modern Geometry with Applications

This introduction to modern geometry differs from other books in the field due to its emphasis on applications and its discussion of special relativity as a major example of a non-Euclidean geometry. Additionally, it covers the two important areas of non-Euclidean geometry, spherical geometry and projective geometry, as well as emphasising transformations, and conics and planetary orbits. Much emphasis is placed on applications throughout the book, which motivate the topics.

1st ed. 1994. Corr. 3rd printing 1997. VIII, 187 p. 150 illus. (Universitext) Softcover
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Analysis and Probability

Wavelets, Signals, Fractals

Combining analysis and tools from mathematical probability, this book focuses on a systematic and novel exposition of a recent trend in pure and applied mathematics. It brings together tools from engineering (especially signal/image processing) and mathematics (harmonic analysis and operator theory). The book applies a hands-on approach with generous motivation and new pedagogical techniques. The presentation includes numerous exercises that help reinforce fundamental concepts.

2006. XLVII, 276 p. 58 illus. (Graduate Texts in Mathematics, Volume 234) Hardcover
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J. Jost, Max Planck Institute for Mathematics in the Sciences, Leipzig, Germany

Compact Riemann Surfaces

An Introduction to Contemporary Mathematics

Although Riemann surfaces are a time-honored field, this book is novel in its broad perspective: the text systematically explores the connection with other fields of mathematics. It can serve as an introduction to contemporary mathematics as a whole, as it develops background material from algebraic topology, differential geometry, the calculus of variations, elliptic PDE, and algebraic geometry. For this new edition, the author has expanded and rewritten several sections.

3rd ed. 2006. XVIII, 282 p. 23 illus. (Universitext) Softcover
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J. Jost, Max-Planck-Institute for Mathematics in the Sciences, Leipzig, Germany

Dynamical Systems

Examples of Complex Behaviour

This book presents a survey of dynamical systems and its significance for research in complex systems. It also explains the fundamental underlying mathematical concepts, with a particular focus on invariants of dynamical systems. Entropy and related concepts in the topological, metric, measure theoretic and smooth settings and some connections with information theory are discussed, and cellular automata and random Boolean networks are presented as specific examples.

2005. VIII, 189 p. 65 illus., 15 in color. (Universitext) Softcover
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P. Kall, J. Mayer, University of Zurich, Switzerland

Stochastic Linear Programming

Models, Theory, and Computation

Peter Kall and János Mayer are distinguished scholars and professors of Operations Research and their research interest is particularly devoted to the area of stochastic optimization. Stochastic Linear Programming is a definitive presentation and discussion of the theoretical properties of the models, the conceptual algorithmic approaches, and the computational issues relating to the implementation of these methods to solve problems that are stochastic in nature.

2005. XII, 398 p. 32 illus. (International Series in Operations Research & Management Science, Volume 80) Hardcover
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S. Kanemitsu, Dept. of Liberal Arts, Kinki University, Iizuka, Japan; K. Gyory, University of Debrecen, Hungary (Eds.)

Number Theory and Its Applications

The contents of this volume range from expository papers on several aspects of number theory, intended for general readers (Steinhaus property of planar regions; experiments with computers; Diophantine approximation; number field sieve), to a collection of research papers for specialists, which are at prestigious journal level. Thus, Number Theory and Its Applications leads the reader in many ways not only to the state of the art of number theory but also to its rich garden.

1999. 388 p. (Developments in Mathematics, Volume 2) Hardcover
ISBN ► 978-0-7923-5952-4

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I. Karatzas, Columbia University, New York, NY, USA; S. E. Shreve, Carnegie Mellon University, Pittsburgh, PA, USA

Brownian Motion and Stochastic Calculus

This book contains a detailed discussion of weak and strong solutions of stochastic differential equations and a study of local time for semi-martingales, with special emphasis on the theory of Brownian local time. Include a large number of problems and exercises.

From the reviews ► *A valuable book for every graduate student studying stochastic process, and for those who are interested in pure and applied probability. The authors have done a good job.*
► MATHEMATICAL REVIEWS

2nd ed. 1991. Corr. 8th printing 2005. XXIII, 470 p. 10 illus. (Graduate Texts in Mathematics, Volume 113) Softcover
ISBN ► 978-0-387-97655-6

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I. Karatzas, Columbia University, New York, NY, USA; S. E. Shreve, Carnegie-Mellon University, Pittsburgh, PA, USA

Methods of Mathematical Finance

Written by two of the best-known researchers in mathematical finance, *Methods of Mathematical Finance* will appeal to theorists and practitioners in this very active research area. It is the sequel to *Brownian Motion and Stochastic Calculus* by the same authors, and includes much material that has not appeared before in book form.

From the reviews ► *Constitutes a valuable research-level text which should be consulted by anyone interested in the area.* ► MATHEMATICAL REVIEWS

1st ed. 1998. Corr. 3rd printing 2001. XV, 415 p. (Stochastic Modelling and Applied Probability, Volume 39) Hardcover
ISBN ► 978-0-387-94839-3

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A. F. Karr, National Institute of Statistical Sciences, Research Triangle Park, NC, USA

Probability

This book offers a straightforward introduction to the mathematical theory of probability. It presents the central results and techniques of the subject in a complete and self-contained account. As a result, the emphasis is on giving results in simple forms with clear proofs and to eschew more powerful forms of theorems which require technically involved proofs. Throughout there are a wide variety of exercises to illustrate and to develop ideas in the text.

1993. 312 p. (Springer Texts in Statistics) Hardcover
ISBN ► 978-0-387-94071-7

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M. Kashiwara, University of Kyoto, Japan; P. Schapira, Université Pierre et Marie Curie, Paris, France

Categories and Sheaves

Categories and sheaves appear almost frequently in contemporary advanced mathematics. This book covers categories, homological algebra and sheaves in a systematic manner starting from scratch and continuing with full proofs to the most recent results in the literature, and sometimes beyond. The authors present the general theory of categories and functors, emphasizing inductive and projective limits, tensor categories, representable functors, ind-objects and localization.

2006. X, 497 p. (Grundlehren der mathematischen Wissenschaften, Volume 332) Hardcover
ISBN ▶ 978-3-540-27949-5

List price

▶ € 89,95 | £ 69,00
▶ * € (D) 96,25 | € (A) 98,95 | sFr 157,00

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M. Kashiwara, Kyoto University, Kyoto, Japan;
P. Schapira, University of Paris VI, Paris, France

Sheaves on Manifolds

With a Short History "Les debuts de la theorie des faisceaux" by Christian Houzel

Sheaf Theory is modern, active field of mathematics at the intersection of algebraic topology, algebraic geometry and partial differential equations. This volume offers a comprehensive and self-contained treatment of Sheaf Theory from the basis up, with emphasis on the microlocal point of view.

From the reviews ▶ *Clearly and precisely written, and contains many interesting ideas: it describes a whole, largely new branch of mathematics.*

▶ Bulletin of the L.M.S.

1st ed. 1990. 3rd printing 2002. X, 512 p. (Grundlehren der mathematischen Wissenschaften, Volume 292) Hardcover
ISBN ▶ 978-3-540-51861-7

List price

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C. Kassel, Université Louis Pasteur, Strasbourg, France

Quantum Groups

Here is an introduction to the theory of quantum groups with emphasis on the spectacular connections with knot theory and Drinfeld's recent fundamental contributions. It presents the quantum groups attached to SL_2 as well as the basic concepts of the theory of Hopf algebras. Coverage also focuses on Hopf algebras that produce solutions of the Yang-Baxter equation and provides an account of Drinfeld's elegant treatment of the monodromy of the Knizhnik-Zamolodchikov equations.

1995. XII, 552 p. 88 illus. (Graduate Texts in Mathematics, Volume 155) Hardcover
ISBN ▶ 978-0-387-94370-1

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G. Kato, California Polytechnic State University, San Luis Obispo, CA, USA

The Heart of Cohomology

If you have not heard about cohomology, The Heart of Cohomology may be suited for you. The book gives Fundamental notions in cohomology for examples, functors, representable functors, Yoneda embedding, derived functors, spectral sequences, derived categories are explained in elementary fashion. Applications to sheaf cohomology. In addition, the book examines cohomological aspects of D-modules and of the computation of zeta functions of the Weierstrass family.

2006. XIII, 195 p. Hardcover
ISBN ▶ 978-1-4020-5035-0

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C. Klein, Max-Planck-Institut für Mathematik in den Naturwissenschaften, Leipzig, Germany; O. Richter

Ernst Equation and Riemann Surfaces

Analytical and Numerical Methods

Exact solutions to Einstein's equations have been useful for the understanding of general relativity in many respects. They have led to such physical concepts as black holes and event horizons, and helped to visualize interesting features of the theory. This volume studies the solutions to the Ernst equation associated to Riemann surfaces in detail. In addition, the book discusses the physical and mathematical aspects of this class analytically as well as numerically.

2005. X, 251 p. 57 illus. With online files/update. (Lecture Notes in Physics, Volume 685) Hardcover
ISBN ▶ 978-3-540-28589-2

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P. E. Kloeden, Johann-Wolfgang-Goethe-Universität, Frankfurt, Germany; E. Platen, University of Technology Sydney, NSW, Australia

Numerical Solution of Stochastic Differential Equations

The numerical analysis of stochastic differential equations (SDEs) differs significantly from that of ordinary differential equations. This book provides an easily accessible introduction to SDEs, their applications and the numerical methods to solve such equations.

From the reviews ▶ *The authors draw upon their own research and experiences in obviously many disciplines... considerable time has obviously been spent writing this in the simplest language possible.*
▶ ZAMP

1st ed. 1992. Corr. 3rd printing 1999. XXXVI, 636 p. (Stochastic Modelling and Applied Probability, Volume 23) Hardcover
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N. Koblitz, University of Washington, Seattle, WA, USA

A Course in Number Theory and Cryptography

This is a revised and updated introduction to arithmetic topics, both ancient and modern, that have been at the center of interest in applications of number theory, particularly in cryptography. It takes an algorithmic approach, emphasizing estimates of the efficiency of the techniques that arise from the theory, and includes recent applications of the theory of elliptic curves. Extensive exercises and careful answers are an integral part all of the chapters.

2nd ed. 1994. X, 235 p. 6 illus. (Graduate Texts in Mathematics, Volume 114) Hardcover
ISBN ► 978-0-387-94293-3

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N. I. Koblitz, University of Washington, Seattle, WA, USA

Introduction to Elliptic Curves and Modular Forms

The theory of elliptic curves and modular forms provides a fruitful meeting ground for such diverse areas as number theory, complex analysis, algebraic geometry, and representation theory. This book starts out with a problem from elementary number theory and proceeds to lead its reader into the modern theory, covering such topics as the Hasse-Weil L-function and the conjecture of Birch and Swinnerton-Dyer. This new edition details the current state of knowledge of elliptic curves.

2nd ed. 1993. 268 p. 25 illus. (Graduate Texts in Mathematics, Volume 97) Hardcover
ISBN ► 978-0-387-97966-3

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Problems and Theorems in Classical Set Theory

This volume contains a variety of problems from classical set theory, many of which are also related to other fields of mathematics, including algebra, combinatorics, topology and real analysis. Rather than using drill exercises, most problems are challenging and require work, wit, and inspiration. They vary in difficulty and are organized in such a way that earlier problems help in the solution of later ones. The book also traces the history of the problems.

2006. XII, 516 p. (Problem Books in Mathematics) Hardcover
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Measure and Integration

An Advanced Course in Basic Procedures and Applications

This book aims at restructuring some fundamentals in measure and integration theory. It centers around the ubiquitous task to produce appropriate contents and measures from more primitive data like elementary contents and elementary integrals. It develops the new approach started around 1970 by Topsøe and others into a systematic theory. The theory is much more powerful than the traditional means and has striking implications all over measure theory and beyond.

1997. XXII, 260 p. Hardcover
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M. Kreuzer, University of Dortmund, Germany; L. Robbiano, University of Geneva, Italy

Computational Commutative Algebra 2

From the reviews ► *The second volume of the authors' 'Computational commutative algebra'... covers on its 586 pages a wealth of interesting material with several unexpected applications. ... an encyclopedia on computational commutative algebra, a source for lectures on the subject as well as an inspiration for seminars. The text is recommended for all those who want to learn and enjoy an algebraic tool that becomes more and more relevant to different fields of applications.*

► ZENTRALBLATT MATH

2005. X, 586 p. Hardcover
ISBN ► 978-3-540-25527-7

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H. Kuo, Louisiana State University, Baton Rouge, LA, USA

Introduction to Stochastic Integration

Also called Ito calculus, the theory of stochastic integration has applications in virtually every scientific area involving random functions. This introductory textbook provides a concise introduction to the Ito calculus.

From the reviews ► *Introduction to Stochastic Integration is exactly what the title says. I would maybe just add a 'friendly' introduction because of the clear presentation and flow of the contents.*

► THE MATHEMATICAL SCIENCES DIGITAL LIBRARY

2006. XIII, 279 p. 2 illus. (Universitext) Softcover
ISBN ► 978-0-387-28720-1

List price

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Sale price

► € 24,95 | £19.00
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Y. A. Kuznetsov, Rijksuniversiteit Utrecht, The Netherlands

Elements of Applied Bifurcation Theory

This book presents nonlinear dynamical systems and their bifurcations, providing explicit procedures and examples for the application of general mathematical results to particular problems. This new edition incorporates many recent theoretical developments, in particular, new and improved numerical methods for bifurcation analysis.

From Reviews of the First Edition ▶ *I know of no other book that so clearly explains the basic phenomena of bifurcation theory.* ▶ MATHEMATICAL REVIEWS

3rd ed. 2004. XXII, 631 p. 251 illus. (Applied Mathematical Sciences, Volume 112) Hardcover
ISBN ▶ 978-0-387-21906-6

List price

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A. E. Kyprianou, University of Bath, UK

Introductory Lectures on Fluctuations of Lévy Processes with Applications

This textbook forms the basis of a graduate course on the theory and applications of Lévy processes, from the perspective of their path fluctuations. The book aims to be mathematically rigorous while still providing an intuitive feel for underlying principles. The results and applications often focus on the case of Lévy processes with jumps in only one direction, for which recent theoretical advances have yielded a higher degree of mathematical transparency and explicitness.

2006. XIII, 378 p. 22 illus. (Universitext) Softcover
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S. Lang, Yale University, New Haven, CT, USA

Algebraic Number Theory

This is a second edition of Lang's well-known textbook. It covers all of the basic material of classical algebraic number theory, giving the student the background necessary for the study of further topics in algebraic number theory, such as cyclotomic fields, or modular forms.

From the review ▶ *Lang's books are always of great value for the graduate student and the research mathematician. This updated edition of Algebraic number theory is no exception.*

▶ MATHEMATICAL REVIEWS

2nd ed. 1994. Corr. 3rd printing 2000. XIII, 357 p. 7 illus. (Graduate Texts in Mathematics, Volume 110) Hardcover
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S. Lang, Yale University, New Haven, CT, USA

Fundamentals of Differential Geometry

This book provides an introduction to the basic concepts in differential topology, differential geometry, and differential equations, and some of the main basic theorems in all three areas. This new edition includes new chapters, sections, examples, and exercises.

From the reviews ▶ *There are many books on the fundamentals of differential geometry, but this one is quite exceptional; this is not surprising for those who know Serge Lang's books.* ▶ EMS NEWSLETTER

1st ed. 1999. Corr. 2nd printing 2001. XVII, 535 p. 22 illus. (Graduate Texts in Mathematics, Volume 191) Hardcover
ISBN ▶ 978-0-387-98593-0

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S. Lang, Yale University, New Haven, CT, USA

Real and Functional Analysis

This book is meant as a text for a first-year graduate course in analysis. In a sense, it covers the same topics as elementary calculus but treats them in a manner suitable for people who will be using it in further mathematical investigations. The organization avoids long chains of logical interdependence, so that chapters are mostly independent. This allows a course to omit material from some chapters without compromising the exposition of material from later chapters.

3rd ed. 1993. 600 p. 37 illus. (Graduate Texts in Mathematics, Volume 142) Hardcover
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S. Lang, Yale University, New Haven, CT, USA

Undergraduate Algebra

From the reviews ▶ *[Professor Lang] has tried to both improve and up-date his already well-established text....Numerous examples and exercises accompany this now already classic primer of modern algebra, which as usual, reflects the author's great individuality just as much as his unrivalled didactic mastery and his care for profound mathematical education at any level....[It] will remain one of the great standard introductions to the subject for beginners.*

▶ ZENTRALBLATT MATH

3rd ed. 2005. XI, 385 p. 1 illus. (Undergraduate Texts in Mathematics) Hardcover
ISBN ▶ 978-0-387-22025-3

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S. Lang, Yale University, New Haven, CT, USA

Undergraduate Analysis

This logically self-contained introduction to analysis centers around those properties that have to do with uniform convergence and uniform limits in the context of differentiation and integration.

From the reviews ▶ *This material can be gone over quickly by the really well-prepared reader, for it is one of the book's pedagogical strengths that the pattern of development later recapitulates this material as it deepens and generalizes it.*

▶ AMERICAN MATHEMATICAL SOCIETY

2nd ed. 1997. Corr. 4th printing 2004. XV, 668 p. 91 illus. (Undergraduate Texts in Mathematics) Hardcover
ISBN ▶ 978-0-387-94841-6

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M. L. Lapidus, University of California, Riverside, CA, USA; M. v. Frankenhuysen, Utah Valley State College, Orem, UT, USA

Fractal Geometry, Complex Dimensions and Zeta Functions

Geometry and Spectra of Fractal Strings

Number theory, spectral geometry and fractal geometry are interlinked in this study of the vibrations of fractal strings, that is, one-dimensional drums with fractal boundary. In this book the Riemann hypothesis is given a natural geometric reformulation in the context of vibrating fractal strings. The book also offers explicit formulas extended to apply to the geometric, spectral and dynamic zeta functions associated with a fractal as well as many examples and illustrations.

2006. XXIV, 464 p. 54 illus. (Springer Monographs in Mathematics) Hardcover
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Function Algebras on Finite Sets

Basic Course on Many-Valued Logic and Clone Theory

Function Algebras on Finite Sets gives a broad introduction to the subject, leading up to the cutting edge of research. The general concepts of the Universal Algebra are given in the first part of the book, to familiarize the reader from the very beginning on with the algebraic side of function algebras. The second part covers the following topics: Galois-connection between function algebras and relation algebras, completeness criterions, and clone theory.

2006. XIV, 668 p. 42 illus. (Springer Monographs in Mathematics) Hardcover
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J. M. Lee, University of Washington, Seattle, WA, USA

Introduction to Smooth Manifolds

This introductory graduate-level textbook familiarizes students with the tools they will need to use manifolds in research. The approach is as concrete as possible, with pictures and intuitive discussions of how one should think geometrically about the abstract concepts, while making full use of the powerful tools that modern mathematics has to offer. Along the way, the book introduces some of the most important examples of geometric structures that manifolds can carry.

2003. XVII, 628 p. 157 illus. (Graduate Texts in Mathematics, Volume 218) Softcover
ISBN ▶ 978-0-387-95448-6

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▶ * € (D) 50,24 | € (A) 51,65 | sFr 82,00

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▶ * € (D) 28,84 | € (A) 29,65 | sFr 47,00

J. M. Lee, University of Washington, Seattle, WA, USA

Introduction to Topological Manifolds

Manifolds play an important role in topology, geometry, complex analysis, algebra, and classical mechanics. Learning manifolds differs from most other introductory mathematics in that the subject matter is often completely unfamiliar. This introduction guides readers by explaining the roles manifolds play in diverse branches of mathematics and physics. The book begins with the basics of general topology and gently moves to manifolds, the fundamental group, and covering spaces.

2000. XVII, 385 p. 194 illus. (Graduate Texts in Mathematics, Volume 202) Softcover
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M. Lefebvre, Ecole Polytechnique de Montréal, QC, Canada

Applied Probability and Statistics

This book moves systematically through the topic of applied probability from an introductory chapter to such topics as random variables and vectors, stochastic processes, estimation, testing and regression. The topics are well chosen and the presentation is enriched by many examples from real life. Each chapter concludes with many original, solved and unsolved problems and hundreds of multiple choice questions, enabling those unfamiliar with the topics to master them.

2006. XVII, 356 p. 58 illus. Hardcover
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A. Lichtenberg, M. Lieberman, University of California, Berkeley, CA, USA

Regular and Chaotic Dynamics

This book treats nonlinear dynamics in both Hamiltonian and dissipative systems. The emphasis is on the mechanics for generating chaotic motion, methods of calculating the transitions from regular to chaotic motion, and the dynamical and statistical properties of the dynamics when it is chaotic. The new edition brings the subject matter in a rapidly expanding field up to date, and has greatly expanded the treatment of dissipative dynamics to include most important subjects.

2nd ed. 1992. 225 illus. (Applied Mathematical Sciences, Volume 38) Hardcover
ISBN ▶ 978-0-387-97745-4

List price

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▶ * € (D) 139,05 | € (A) 142,95 | sFr 226,50

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▶ * € (D) 69,50 | € (A) 71,45 | sFr 113,50

R. S. Liptser, Tel Aviv University, Israel;
A. N. Shiryaev, Steklov Mathematical Institute, Moscow, Russia

Statistics of Random Processes

II. Applications

Transl. Russian: A. Aries

From the reviews ▶ *Written by two renowned experts in the field, the books under review contain a thorough and insightful treatment of the fundamental underpinnings of various aspects of stochastic processes as well as a wide range of applications. Providing clear exposition, deep mathematical results, and superb technical representation, they are masterpieces of the subject of stochastic analysis and nonlinear filtering.... These books...will become classics.* ▶ SIAM REVIEW

2nd rev. and exp. ed. 2001. XV, 402 p. (Stochastic Modelling and Applied Probability, Volume 6) Hardcover
ISBN ▶ 978-3-540-63928-2

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P. Macheras, School of Pharmacy, Zographou, Greece; A. Iliadis, Faculty of Pharmacy, Marseille, France

Modeling in Biopharmaceutics, Pharmacokinetics and Pharmacodynamics

Homogeneous and Heterogeneous Approaches

This book presents a novel modeling approach to biopharmaceutics, pharmacokinetics and pharmacodynamic phenomena. It shows how advanced physical and mathematical methods can expand classical models in order to cover heterogeneous drug-biological processes and therapeutic effects in the body. Throughout, many examples are used to illustrate the intrinsic complexity of drug administration related phenomena in the human, justifying the use of advanced modeling methods.

2006. XX, 442 p. 131 illus. (Interdisciplinary Applied Mathematics, Volume 30) Hardcover
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S. MacLane, University of Chicago, IL, USA;
I. Moerdijk, University of Utrecht, The Netherlands

Sheaves in Geometry and Logic

A First Introduction to Topos Theory

Sheaves arose in geometry as coefficients for cohomology and as descriptions of the functions appropriate to various kinds of manifolds. Sheaves also appear in logic as carriers for models of set theory. This text presents topos theory as it has developed from the study of sheaves. Beginning with several examples, it explains the underlying ideas of topology and sheaf theory as well as the general theory of elementary toposes and geometric morphisms and their relation to logic.

1st ed. 1992. Corr. 2nd printing 1994. XII, 629 p. (Universitext) Softcover
ISBN ▶ 978-0-387-97710-2

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2nd ed. 2003. Corr. 3rd printing 2005. XIII, 419 p. (Stochastic Modelling and Applied Probability, Volume 21) Hardcover
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1st ed. 2002. Corr. 2nd printing 2003. XI, 437 p. 133 illus. (Undergraduate Texts in Mathematics) Hardcover
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This introduction to Scientific Computing illustrates several numerical methods for the computer solution of certain classes of mathematical problems. The authors show how to compute the zeros or the integrals of continuous functions, solve linear systems, approximate functions by polynomials and construct accurate approximations for the solution of differential equations. To make the presentation concrete, the programming environment Matlab is adopted as a faithful companion.

2nd ed. 2006. XVI, 318 p. 108 illus., 97 in color. (Texts in Computational Science and Engineering, Volume 2) Hardcover
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5th ed. 2004. 562 p. 150 illus. Hardcover
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Probability Theory with Applications

This is a revised and expanded edition of a successful graduate and reference text. The book is designed for a standard graduate course on probability theory, including some important applications. The new edition offers a detailed treatment of the core area of probability, and both structural and limit results are presented in detail. Compared to the first edition, the material and presentation are better highlighted; each chapter is improved and updated.

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Foundations of Hyperbolic Manifolds

This class-tested book is an exposition of the theoretical foundations of hyperbolic manifolds. It is both a textbook and a reference. A basic knowledge of algebra and topology at the first year graduate level of an American university is assumed. The first part covers hyperbolic geometry and discrete groups. The second part is devoted to the theory of hyperbolic manifolds. The third part integrates the first two parts in a development of the theory of hyperbolic orbifolds.

2nd ed. 2006. XII, 783 p. 170 illus. (Graduate Texts in Mathematics, Volume 149) Hardcover
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This book treats mathematical logic in a concise and streamlined fashion, allowing many important topics to be covered in a one semester course. Although the book is intended for use as a graduate text the first three chapters can be understood by undergraduates interested in mathematical logic. The remaining chapters contain material on logic programming for computer scientists, model theory, recursion theory, Gödel's Incompleteness Theorems, and applications of mathematical logic.

2nd ed. 2006. XVIII, 260 p. 8 illus. (Universitext) Softcover
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This book provides the reader with the tools to understand the ongoing classification and construction project of Lie superalgebras. It presents the material in as simple terms as possible. Coverage specifically details Borcherds-Kac-Moody superalgebras. The book examines the link between the above class of Lie superalgebras and automorphic form and explains their construction from lattice vertex algebras. It also includes all necessary background information.

2006. X, 290 p. (Algebra and Applications, Volume 5) Hardcover
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A vivid look at the material from function theory, including the residue calculus, supported by examples and practice exercises throughout. There is also ample discussion of the historical evolution of the theory, biographical sketches of important contributors, and citations--in the original language with their English translation--from their classical works.

From the reviews ► *The book affords splendid opportunities for a rich treatment of the subject.*
► MATHEMATICAL REVIEWS

1st. ed. 1991. Corr. 4th printing 1999. 484 p. 68 illus. (Graduate Texts in Mathematics / Readings in Mathematics, Volume 122) Hardcover
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M. G. Resende, AT & T Labs Research, Florham Park, NJ, USA; P. M. Pardalos, University of Florida, Gainesville, FL, USA (Eds.)

Handbook of Optimization in Telecommunications

This handbook brings together experts from around the world who use optimization to solve problems that arise in telecommunications, covering recent optimization developments that are frequently applied to telecommunications. The spectrum of topics covered include planning and design of telecommunication networks, network protection, wireless communications, network location and assignment problems, Internet protocol, World Wide Web, and stochastic issues in telecommunications.

2006. XXXII, 1134 p. 129 illus. Hardcover
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D. Revuz, Université Paris VII, Paris, France; M. Yor, Université Pierre et Marie Curie, Paris, France

Continuous Martingales and Brownian Motion

From the reviews ▶ *This is a magnificent book! Its purpose is to describe in considerable detail a variety of techniques used by probabilists in the investigation of problems concerning Brownian motion.... This is THE book for a capable graduate student starting out on research in probability: the effect of working through it is as if the authors are sitting beside one, enthusiastically explaining the theory, presenting further developments as exercises.* ▶ BULLETIN OF THE L.M.S.

3rd ed. 1999. Corr. 3rd printing 2005. XI, 606 p. 8 illus. (Grundlehren der mathematischen Wissenschaften, Volume 293) Hardcover
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D. J. Robinson, University of Illinois, Urbana, IL, USA

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R. T. Rockafellar, University of Washington, Seattle, WA, USA; R. J. Wets, University of California at Davis, Davis, CA, USA

Variational Analysis

From its origins in the minimization of integral functionals, the notion of variations has evolved greatly in connection with applications in optimization, equilibrium, and control. This book develops a unified framework and provides a detailed exposition of variational geometry and subdifferential calculus in their current forms beyond classical and convex analysis. Also covered are set-convergence, set-valued mappings, epi-convergence, duality, and normal integrands.

1st. ed. 1998. Corr. 2nd printing 2004. XIII, 734 p. 151 illus. (Grundlehren der mathematischen Wissenschaften, Volume 317) Hardcover
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S. Roman, University of California at Irvine, CA, USA

Field Theory

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2nd ed. 2006. XII, 335 p. 18 illus. (Graduate Texts in Mathematics, Volume 158) Hardcover
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J. J. Rotman, University of Illinois at Urbana-Champaign, Urbana, IL, USA

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Anyone who has studied abstract algebra and linear algebra as an undergraduate can understand this book. The first six chapters provide material for a first course, while the rest of the book covers more advanced topics. This revised edition retains the clarity of presentation that was the hallmark of the previous editions.

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▶ MATHEMATICAL REVIEWS

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▶ ZENTRALBLATT MATH

2nd ed. 2001. XV, 238 p. 31 illus. (Graduate Texts in Mathematics, Volume 203) Hardcover
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O. Scherzer, Universität Innsbruck, Austria (Ed.)

Mathematical Models for Registration and Applications to Medical Imaging

This volume gives a survey on mathematical and computational methods in image registration. During the last year sophisticated numerical models for registration and efficient numerical methods have been proposed. Many of them are contained in this volume. The book also summarizes the state-of-the-art in mathematical and computational methods in image registration. In addition, it covers some practical applications and new directions with industrial relevance in data processing.

2006. X, 191 p. 54 illus., 12 in color. (Mathematics in Industry / The European Consortium for Mathematics in Industry, Volume 10) Hardcover

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P. J. Schmid, University of Washington, Seattle, WA, USA; D. S. Henningson, Royal Institute of Technology, Stockholm, Sweden

Stability and Transition in Shear Flows

From the reviews ▶ *This book presents a modern treatment of stability in shear flows. Stability theory has seen a number of classic treatments over the years... Schmid and Henningson's book builds on these and offers much new material relevant to stability in shear flows... The MATLAB codes included in the appendix and a discussion of the effects of rounding error and resolution on the computations of eigenvalues of linear stability operators will be particularly helpful.* ▶ SIAM REVIEW

2001. XIII, 556 p. 206 illus. (Applied Mathematical Sciences, Volume 142) Hardcover

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Optimization in Public Transportation

Stop Location, Delay Management and Tariff Zone Design in a Public Transportation Network

This book develops models, results and algorithms for optimizing public transportation from a customer-oriented viewpoint. The methods used are based on graph-theoretic approaches and integer programming. The specific topics are all motivated by real-world examples which occurred in practical projects: location of stops, management of delay, and tariff zone design. An appendix summarizes some of the basics of optimization needed to interpret the material in the book.

2006. XIV, 274 p. 66 illus. (Springer Optimization and Its Applications, Volume 3) Hardcover
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2006. VI, 444 p. 14 illus. (Signals and Communication Technology) Hardcover
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T. Sekimura, Chubu University, Kasugai, Japan;
S. Noji, University of Tokushima, Japan; N. Ueno,
National Institute for Basic Biology, Okazaki, Japan;
P. Maini, University of Oxford, UK (Eds.)

Morphogenesis and Pattern Formation in Biological Systems

Experiments and Models

A central goal of biology is to decode the mechanisms that underlie the processes of morphogenesis and pattern formation. Concerned with the analysis of those phenomena, this book integrates experimental and theoretical aspects of biology for the construction and investigation of models of complex processes. It offers an interdisciplinary approach to the pattern formation problems and provides a scope of forthcoming integrated biology including experiments and theories.

2003. XX, 398 p. 191 illus., 16 in color. Hardcover
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2006. XI, 342 p. (Grundlehren der mathematischen Wissenschaften, Volume 334) Hardcover
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1st ed. 1973. Corr. 5th printing 1996. 3 illus. (Graduate Texts in Mathematics, Volume 7) Hardcover
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1st ed. 1979. Corr. 2nd printing 1995. VIII, 241 p. 1 illus. (Graduate Texts in Mathematics, Volume 67) Hardcover
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▶ WWW.RISKBOOK.COM

3rd ed. 2006. XIX, 304 p. 75 illus. (Universitext)

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I. R. Shafarevich, Steklov Mathematical Institute, Moscow, Russia

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2nd, rev. and exp. ed. 1st printing 1996. XV, 269 p.

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1999. XI, 246 p. 35 illus. Softcover

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S. E. Shreve, Carnegie Mellon University, Pittsburgh, PA, USA

Stochastic Calculus for Finance I

The Binomial Asset Pricing Model

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2004. XV, 208 p. 33 illus. (Springer Finance) Hardcover

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J. H. Silverman, Brown University, Providence, RI, USA

Advanced Topics in the Arithmetic of Elliptic Curves

This book continues the treatment of the arithmetic theory of elliptic curves begun in the first volume. Numerous exercises have been included at the end of each chapter. A list of comments and citations for the exercises will be found at the end of the book.

From the reviews ▶ *This book deserves to be as popular as its forerunner and a great many people will be looking forward to reading a third volume.*

▶ MONATSFESTE FÜR MATHEMATIK

1st ed. 1994. Corr. 2nd printing 1999. XIII, 548 p. 16

illus. (Graduate Texts in Mathematics, Volume 151)

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K. E. Smith, University of Michigan, Ann Arbor, MI, USA; L. Kahanpää, University of Jyväskylä, Finland; P. Kekäläinen, University of Kuopio, Finland; W. Traves, US Naval Academy, Annapolis, MD, USA

An Invitation to Algebraic Geometry

This is a description of the underlying principles of algebraic geometry, some of its important developments in the twentieth century, and some of the problems that occupy its practitioners today. It is intended for the working or the aspiring mathematician who is unfamiliar with algebraic geometry but wishes to gain an appreciation of its foundations and its goals with a minimum of prerequisites. Few algebraic prerequisites are presumed beyond a basic course in linear algebra.

1st ed. 2000. Corr. 2nd printing 2004. XVI, 161 p. 44

illus. (Universitext) Hardcover

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L. Smith, University of Göttingen, Germany

Linear Algebra

Here is a compact, mathematically clean introduction to linear algebra with particular emphasis on topics in abstract algebra, the theory of differential equations, and group representation theory. This popular and successful text was written for a one-semester course in linear algebra at the sophomore undergraduate level. In the second edition, a new chapter on Jordan normal form was added which reappears here in expanded form as the second goal of this new edition.

3rd ed. 1998. XII, 472 p. 23 illus. (Undergraduate Texts in Mathematics) Hardcover
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J. M. Steele, University of Pennsylvania, Philadelphia, PA, USA

Stochastic Calculus and Financial Applications

Stochastic calculus has important applications to mathematical finance. This book will appeal to practitioners and students who want an elementary introduction to these areas.

From the reviews ► *As the preface says, 'This is a text with an attitude, and it is designed to reflect, wherever possible and appropriate, a prejudice for the concrete over the abstract'. This is also reflected in the style of writing which is unusually lively for a mathematics book.* ► ZENTRALBLATT MATH

1st ed. 2001. Corr. 3rd printing 2003. IX, 300 p. 3 illus. (Stochastic Modelling and Applied Probability, Volume 45) Hardcover
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J. Stillwell, Monash University, Clayton, Vic., Australia

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The geometry of surfaces is an ideal starting point for learning geometry, for, among other reasons, the theory of surfaces of constant curvature has maximal connectivity with the rest of mathematics. This text provides the student with the knowledge of a geometry of greater scope than the classical geometry taught today, which is no longer an adequate basis for mathematics or physics, both of which are becoming increasingly geometric. It includes exercises and informal discussions.

1st ed. 1992. Corr. 2nd printing 1995. XI, 216 p. 165 illus. (Universitext) Softcover
ISBN ► 978-0-387-97743-0

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1997. 364 p. 95 illus. (Undergraduate Texts in Mathematics) Hardcover
ISBN ► 978-0-387-98289-2

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This textbook demonstrates that geometry can be developed in four fundamentally different ways, and that all should be used if the subject is to be shown in all its splendor. The Four Pillars of Geometry contains more than 100 figures, and a large selection of exercises in each chapter.

From the reviews ► *Gives a brief introduction to many sides of geometry and includes many beautiful results, each explained from a perspective that makes it easy to understand.* ► SIAM Review

2005. XII, 229 p. 138 illus. (Undergraduate Texts in Mathematics) Hardcover
ISBN ► 978-0-387-25530-9

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This book provides an introduction to the theory of Markov Processes on a countable state space, accessible to students with a solid undergraduate background in mathematics, including students from engineering, economics, physics, and biology. Coverage includes Doebelin's theory, general ergodic properties, and continuous time processes. A chapter is devoted to reversible processes and the use of their associated Dirichlet forms to estimate the rate of convergence to equilibrium.

2005. XIV, 171 p. (Graduate Texts in Mathematics, Volume 230) Softcover
ISBN ► 978-3-540-23451-7

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Nonlinear Programming

Optimization Theory and Methods can be used as a textbook for an optimization course for graduates and senior undergraduates. It is the result of the author's teaching and research over the past decade. It describes optimization theory and several powerful methods. For most methods, the book discusses an idea's motivation, studies the derivation, establishes the global and local convergence, describes algorithmic steps, and discusses the numerical performance.

2006. XII, 687 p. 25 illus. (Springer Optimization and Its Applications, Volume 1) Hardcover
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2006. XII, 318 p. 99 illus., 18 in color. (Monographs in Computational Science and Engineering, Volume 1) Hardcover
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A Model Theory Approach

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2006. XVI, 360 p. 126 illus. (IFSR International Series on Systems Science and Engineering, Volume 24) Hardcover
ISBN ► 978-0-387-31414-3

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Theory of Operator Algebras II

Together with Theory of Operator Algebras I and III, this book presents the theory of von Neumann algebras and non-commutative integration focusing on the group of automorphisms and the structure analysis.

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► ACTA SCIENTIARUM MATHEMATICARUM

2003. XXII, 518 p. (Encyclopaedia of Mathematical Sciences, Volume 125) Hardcover
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2nd ed. 2006. XII, 370 p. (Springer Series in Computational Mathematics, Volume 25) Hardcover
ISBN ► 978-3-540-33121-6

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M. Trott, Wolfram Research Inc., Champaign, IL, USA

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 2006. XXXVI, 1208 p. 1200 illus. With DVD. Hardcover
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The Mathematica GuideBook for Symbolics

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2006. XL, 1453 p. 900 illus. With DVD. Hardcover
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Foundations of Differentiable Manifolds and Lie Groups gives a clear, detailed, and careful development of the basic facts on manifold theory and Lie Groups. Coverage includes differentiable manifolds, tensors and differentiable forms, Lie groups and homogenous spaces, and integration on manifolds. The book also provides a proof of the de Rham theorem via sheaf cohomology theory and develops the local theory of elliptic operators culminating in a proof of the Hodge theorem.

1st ed. 1971. 2nd printing 1983. 292 p. 570 illus.
(Graduate Texts in Mathematics, Volume 94) Hardcover
ISBN ▶ 978-0-387-90894-6

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Introduction to Applied Nonlinear Dynamical Systems and Chaos

This introduction to applied nonlinear dynamics and chaos places emphasis on teaching the techniques and ideas that will enable students to take specific dynamical systems and obtain some quantitative information about their behavior. The new edition has been updated and extended throughout, and contains a detailed glossary of terms.

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2nd ed. 2003. 808 p. 250 illus. (Texts in Applied Mathematics, Volume 2) Hardcover
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G. Winkler, Institute of Biomathematics and Biometry (IBB), Neuherberg, Germany

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A Mathematical Introduction

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The author has presented the theory with rigor...he doesn't neglect applications, providing numerous examples of applications to illustrate the theory.

▶ MATHEMATICAL REVIEWS

2nd ed. Corr. 3rd printing. 2006. XVI, 389 p. 59 illus. With CD-ROM. (Stochastic Modelling and Applied Probability, Volume 27) Hardcover
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The first part of an elementary textbook combining linear functional analysis, nonlinear functional analysis, numerical functional analysis and their substantial applications with each other. Applications concern ordinary and partial differential equations, the method of finite elements, integral equations, special functions, both the Schroedinger approach and the Feynman approach to quantum physics and quantum statistics. The second part is entitled, Applied Functional Analysis.

1st ed 1995. Corr. 3rd printing 1999. XXIX, 481 p. 56 illus. (Applied Mathematical Sciences, Volume 108) Hardcover

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2004. XVIII, 574 p. 65 illus. (Universitext) Hardcover
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2004. XV, 681 p. 41 illus. (Universitext) Hardcover
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2006. XII, 318 p. Hardcover
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Ce livre est une introduction à la théorie de la complexité algébrique basée sur un panorama des méthodes algorithmiques en algèbre linéaire exacte. Il donne en particulier les principaux algorithmes pour le calcul du polynôme caractéristique. Ce livre se remarque par l'étendue des sujets traités tout en restant très lisible.

2004. XV, 376 p. (Mathématiques et Applications, Volume 42) Broché
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L'analyse numérique de deux types de discretisations variationnelles est effectuée en détail pour des problèmes elliptiques: les méthodes spectrales et les méthodes d'éléments finis. L'originalité de cet ouvrage est d'insérer ces deux types de discrétisation dans un cadre abstrait commun, ce qui permet au lecteur d'étendre l'approche à bien d'autres méthodes et problèmes.

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2006. XIII, 175 p. 21 ill. (Mathématiques et Applications, Volume 49) Broché
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Le but de ce livre est de présenter les développements récents du contrôle géométrique orienté vers la commande des véhicules spatiaux. Son contenu a servi de base à une série de cours de contrôle et d'automatique de 3e cycle. Il s'appuie sur des projets de recherche avec l'ESTEC et le CNES, sur le contrôle d'attitude d'un satellite, le problème de transfert orbital en temps minimal, et le problème de rentrée atmosphérique d'une navette spatiale.

2006. XIV, 276 p. 11 ill. (Mathématiques et Applications, Volume 51) Broché
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F. Boyer, Université de Provence, Marseille, France;
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2006. XVI, 400 p. 12 ill. (Mathématiques et Applications, Volume 52) Broché
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Ce cours est une introduction à la modélisation mathématique et à l'analyse numérique pour la chimie moléculaire quantique, un champ peu connu des mathématiciens et pourtant riche en sujets d'investigation. Le point de vue choisi est celui du mathématicien appliqué. Le cours est construit de manière auto-consistante.

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J. Cousteix, Office National d'Etudes et de Recherches Aéronautiques (ONERA), Toulouse, France;
J. Mauss, Université Paul Sabatier, Toulouse, France

Analyse asymptotique et couche limite

Le but du livre est de donner aux enseignants et aux étudiants (à partir de Bac+4) en mathématiques appliquées et en mécanique des fluides un outil d'enseignement et d'apprentissage illustré par cinquante problèmes accompagnés de leur correction détaillée. Il présente une nouvelle méthode d'analyse asymptotique pour des problèmes de "couche limite". Celle-ci est appelée MASC "Méthode des Approximations Successives Complémentaires".

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2003. XII, 599 p. 4 ill. Broché
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2001. XI, 240 p. (SCOPOS, Volume 12) Broché
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J. Istas, Université Pierre Mendès-France, Grenoble, France

Introduction aux modélisations mathématiques pour les sciences du vivant

Le but de cet ouvrage est de présenter un panorama de différentes méthodes mathématiques utilisées pour la modélisation de phénomènes issus du vivant. Nous avons voulu être le plus large possible, incluant ainsi à la fois les méthodes déterministes et les méthodes stochastiques. Chaque modèle mathématique proposé est accompagné d'un exemple concret éclairant la modélisation retenue.

2000. X, 160 p. 29 ill. (Mathématiques et Applications, Volume 34) Broché
ISBN ► 978-3-540-67254-8

List price

► € 28,44 | £22,00
► * € (D) 30,43 | € (A) 31,28 | sFr 49,50

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► * € (D) 19,21 | € (A) 19,75 | sFr 31,00

P. Lopez, INSA de Toulouse, France; A. S. Nouri, École Nationale d'Ingénieurs de Gabès, Gabès, Tunisie

Théorie élémentaire et pratique de la commande par les régimes glissants

La première partie de cet ouvrage est une initiation aux modes glissants complétée par divers aspects pratiques, dans le cas des systèmes continus mono-entrée mono-sortie. La deuxième partie propose divers modes glissants généralisés et aspects théoriques, dans le cas des systèmes multi-entrée multi-sortie continus, discrets et hybrides.

2006. XVI, 338 p. 159 ill. (Mathématiques et Applications, Volume 55) Broché
ISBN ► 978-3-540-31003-7

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► € 61,61 | £47,50
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Sale price

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► * € (D) 37,40 | € (A) 38,45 | sFr 61,00

J. F. Maurras, Laboratoire d'Informatique Fondamentale, Marseille, France

Programmation Linéaire, Complexité

Séparation et Optimisation

Le but de cet ouvrage est de faire une présentation complète et auto contenue de l'équivalence entre les Oracles Séparer, Optimiser et Appartenir en Optimisation Polyédrale.

2002. XIV, 221 p. (Mathématiques et Applications, Volume 38) Broché
ISBN ► 978-3-540-43671-3

List price

► € 40,76 | £31,50
► * € (D) 43,61 | € (A) 44,84 | sFr 71,00

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F. Robert, Université de Grenoble, France

Les Systèmes Dynamiques Discrets

Un système dynamique discret est un ensemble fini d'états, et évoluant, dans un temps discret, par interactions mutuelles. Ce livre est consacré à l'analyse de la dynamique temporelle de tels systèmes. Grâce à des outils de métrique discrète, on établit des résultats de convergence globale (contraction booléenne) convergence locale vers un point fixe ou vers un cycle, et ceci pour différents modes opératoires.

1995. IV, 296 p. (Mathématiques et Applications, Volume 19) Broché
ISBN ► 978-3-540-60086-2

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C. Ruget, Inspection générale de l'éducation nationale, Paris, France (Ed.)

Mathématiques en situation

Issues de l'épreuve de modélisation de l'agrégation

L'ouvrage est un recueil de textes qui ont été proposés aux candidats à l'agrégation de mathématiques, à l'épreuve orale de modélisation. Tous les membres du jury de cette épreuve ont participé à cet ouvrage collectif. Le but est d'une part d'aider les candidats à l'agrégation à mieux se préparer, et d'autre part, de fournir un certain nombre d'exemples aux professeurs.

2001. IX, 186 p. 28 ill. (SCOPOS, Volume 11) Broché
ISBN ► 978-3-540-41279-3

List price

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P. Sagaut, ONERA, Chatillon, France

Introduction à la simulation des grandes échelles pour les écoulements de fluide incompressible

L'ouvrage présente la technique de simulation des grandes échelles. Les bases mathématiques et les hypothèses physiques employées sont rappelées. Les concepts de modélisation structurelle et de modélisation fonctionnelle sont introduits, et servent à établir une liste exhaustive, unique à ce jour, des modèles sous-maille existants. Outre la description de ces modèles, le lecteur trouvera des éléments théoriques et des détails pratiques concernant leur mise en oeuvre.

1998. XIX, 282 p. (Mathématiques et Applications, Volume 30) Broché
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F. Sauvageot, Université Denis Diderot, Paris, France

Petits problèmes de géométries et d'algèbre

Issus des concours d'entrée à l'École normale supérieure de Cachan

► *S'il est destiné en premier lieu aux étudiants des classes préparatoires, qui y trouveront aussi quelques conseils relatifs aux épreuves orales, ce livre réjouira tout amoureux des mathématiques: pour le plaisir!*
► Gazette des Mathématiciens, avril 2000/no 84

2000. XII, 172 p. (SCOPOS, Volume 7) Broché
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Niels Henrik Abel et son époque

Niels Henrik Abel (1802-1829) compte parmi les plus grands mathématiciens de son temps. Écrivain passionné de mathématiques et d'histoire, Arild Stubhaug nous relate le destin singulier d'un des plus grands génies des mathématiques en le replaçant dans le contexte culturel et politique de l'époque.

2004. XII, 580 p. Broché
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A. Stubhaug, Hyggen, Norway

Sophus Lie. Une pensée audacieuse

Sophus Lie (1842-1899) compte parmi les plus grandes figures norvégiennes de la science. La notoriété que lui valent ses travaux n'a rien à envier à celle de son illustre compatriote Niels Henrik Abel. Groupes et algèbres de Lie ont acquis droit de cité dans maints domaines. Dans cette biographie détaillée, l'écrivain Arild Stubhaug, puisant dans la volumineuse correspondance de Lie, décrit l'homme et la société norvégienne dans la seconde moitié du XIXe siècle.

2006. X, 567 p. Broché
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C. Tricot, Université Clermont Ferrand II, Aubière, France

Courbes et dimension fractale

Ce livre fait une revue de diverses techniques d'analyse des courbes planes, en vue des applications. Après une première partie sur les ensembles de mesure nulle sur la droite, une seconde traite des courbes "rectifiables" (de longueur finie), et une troisième, la plus importante, des courbes fractales. Cet ouvrage est destiné aux chercheurs en sciences expérimentales, et comporte un minimum de formalisme mathématique.

2ème édition augmentée 1999. XX, 377 p. Broché
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L. Younes, Johns Hopkins University, Baltimore, MD, USA

Invariance, déformations et reconnaissance de formes

Cet ouvrage introduit un certain nombre de techniques disponibles pour la reconnaissance de formes planes, en mettant l'accent sur l'importance de la prise en compte des deux notions essentielles que sont l'invariance et l'analyse des déformations.

2004. XVII, 248 p. (Mathématiques et Applications, Volume 44) Broché
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J. Zizi, Palaiseau, France

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Tome 1: programme commun aux 1ères et 2èmes années des classes de MPSI,PCSI,MP,PC,PSI,PT,TPC, TSI PCSI, MP, PC, PSI, PT, TPC, TSI

Ce livre peut être utilisé dans des cours de mathématiques ou de physique d'initiation à Mathematica. Plus généralement, il s'inscrit aussi dans les cours d'informatique pour mathématiciens, physiciens et informaticiens, car tous les paradigmes de programmation utilisés sont présents.

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German Titles

B. Beckman, Johanneshov, Schweden

Arne Beurling und Hitlers Geheimschreiber

Schwedische Entzifferungserfolge im 2. Weltkrieg

Schweden 1940: Eine verzweifelte Kriegssituation. Arne Beurling, der launische Mathematiker mit einer besonderen Begabung für Kryptologie, knackt die Verschlüsselung der deutschen Militärkommunikation. Fachlich präzise geschrieben, zieht Bengt Beckman alle Register des klassischen Thrillers. Mittendrin: Arne Beurling, der Erbe des Büros von Einstein am Institute for Advanced Study in Princeton. Er spielt in diesem entscheidenden Moment der Weltgeschichte die Hauptrolle. Der Autor selbst war über viele Jahre Leiter des Bereichs für Kryptoanalyse von Försvarets Radioanstalt, der Regierungsbehörde für Entschlüsselung in Schweden.

2006. XX, 323 S. Brosch.

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Theorie der Funktionen mehrerer komplexer Veränderlichen

2., erw. Aufl. 1970. 248 S. (Ergebnisse der Mathematik und ihrer Grenzgebiete. 2. Folge, Volume 51) Geb.
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W. Blaschke, K. Leichtweiß

Elementare Differentialgeometrie

5., vollst. Neubearb. Aufl. 1973. X, 388 S. (Grundlehren der mathematischen Wissenschaften, Volume 1) Brosch.
ISBN ▶ 978-3-540-05889-2

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A. Desrosières, Institut National de la Statistique et des Etudes Economiques, Paris

Die Politik der großen Zahlen

Eine Geschichte der statistischen Denkweise

Statistik ("Staatenkunde"), Wahrscheinlichkeitsrechnung und die Philosophie der Wahrscheinlichkeit sind auch als "siamesische Drillings" bekannt. Das Buch analysiert den Werdegang der Statistik und zeigt Verbindungen zwischen der internalistischen Geschichte der Formalismen und Werkzeuge sowie der externalistisch orientierten Geschichte der Institutionen auf. Der Spannungsbogen erstreckt sich vom Vorabend der Französischen Revolution bis hin zum Ende des Zweiten Weltkriegs, wobei Frankreich, Deutschland, England und die USA ausführlich behandelt werden.

2005. XIV, 434 S. Brosch.

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MD. Harel, Weizmann Institute of Science, Rehovot, Israel; Y. Feldman, The Interdisciplinary Center, Herzliya, Israel

Algorithmik

Die Kunst des Rechnens

Dieses Buch schildert in sehr gut lesbarer Form einige der wichtigsten und grundlegendsten Themen. Dabei hebt es die elementare, robuste Natur dieser Wissenschaft hervor - unabhängig von den Details spezieller Computer, Computersprachen und Formalismen. Das Buch dient als Grundlage für einsemestrige Einführungskurse oder als Informatik-Einführung in die Naturwissenschaften, Mathematik oder das Ingenieurwesen.

2006. XVIII, 608 S. Geb.

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F. Hausdorff, S. Chatterji, Ecole Polytechnique Federale, Lausanne; R. Remmert, W. Scharlau, Universität Münster (Hrsg.)

Felix Hausdorff - Gesammelte Werke

Band IV: Analysis, Algebra und Zahlentheorie

Der vorliegende Band IV enthält Hausdorffs Arbeiten zur Analysis, Algebra und Zahlentheorie, darunter die klassischen auch heute noch vielzitierten Texte zu Hausdorff-Maß und Hausdorff-Dimension und zum Hausdorffschen Kugelparadoxon. Aus dem Nachlaß werden 19 Faszikel publiziert, ferner einige interessante Briefe.

2001. XIX, 554 S. Geb.

ISBN ▶ 978-3-540-41760-6

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F. Hausdorff, E. Brieskorn, Universität Bonn; S. Chatterji, Ecole Polytechnique Federale, Lausanne; M. Epplé, Universität Stuttgart; U. Felgner, Universität Tübingen; H. Herrlich, Universität Bremen; M. Husek, Charles Universität, Prag, Tschechien; V. Kanovei, Moskau, Russland; P. Kopeke, Universität Bonn; G. Preuß, Freie Universität Berlin; W. Purkert, Universität Bonn; E. Scholz, Universität Wuppertal (Hrsg.)

Felix Hausdorff - Gesammelte Werke Band II

Grundzüge der Mengenlehre

Der vorliegende Band II enthält Hausdorffs wohl wichtigstes Werk, die "Grundzüge der Mengenlehre". Dieses Buch gehört zu den Klassikern der mathematischen Literatur und hat auf die Entwicklung der Mathematik im 20. Jahrhundert einen bedeutenden Einfluß ausgeübt. Daher erschien es geboten, ausführliche Kommentare beizufügen. In diesen Kommentaren werden vor allem die bedeutenden originellen Beiträge, die Hausdorff in den "Grundzügen" zur Topologie, allgemeinen und deskriptiven Mengenlehre geleistet hat, eingehend behandelt.

2002. XVIII, 884 S. Geb.

ISBN ▶ 978-3-540-42224-2

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F. Hausdorff, W. Stegmaier, Philosophisches Institut der Universität Greifswald (Hrsg.)

Felix Hausdorff - Gesammelte Werke Band VII

Philosophisches Werk. "Sant' Ilario. Gedanken aus der Landschaft Zarathustras" "Das Chaos in kosmischer Auslese" Essays zu Nietzsche

Band VII der Gesammelten Werke F. Hausdorffs enthält den Aphorismenband "Sant' Ilario. Gedanken aus der Landschaft Zarathustras" sowie das erkenntniskritische Buch "Das Chaos in kosmischer Auslese". Beide Werke hatte Hausdorff unter dem Pseudonym Paul Mongré veröffentlicht. Der Titel des Aphorismenbandes und die Form deuten auf Nähe zu Nietzsche, im Werk selbst zeigt sich aber auch skeptische Distanz. Im letzten Teil von "Sant' Ilario" skizziert Hausdorff eine ganz eigene Deutung von Nietzsches Wiederkehrlehre, die er im "Chaos in kosmischer Auslese" weiter ausführte.

2004. XXI, 920 S. Geb.

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F. Hirzebruch, Bonn

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1987. XII, 1632 S. Geb.

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M. Kaplan, Technische Universität München

Computeralgebra

Der Autor stellt einige Computeralgebra-Systeme vor und zeigt an Beispielen deren Leistungsfähigkeit. Grundlegende Techniken werden untersucht; für komplexe Fragestellungen werden mehrere Algorithmen angeboten. Die ersten Kapitel beinhalten die nötigen mathematischen Grundlagen, die übrigen können weitestgehend unabhängig voneinander gelesen werden. Alle vorgestellten Algorithmen werden begründet und teilweise in einer Pseudoprogrammiersprache dargestellt. Gleichmaßen geeignet für Studierende der Mathematik und der Informatik.

2005. XII, 391 S. Brosch.

ISBN ▶ 978-3-540-21379-6

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F. Klein

Elementarmathematik vom höheren Standpunkte aus

III: Präzisions- und Approximationsmathematik

Reprint der 3. Aufl. Berlin 1928 1968. 256 S.

(Grundlehren der mathematischen Wissenschaften, Volume 16) Brosch.

ISBN ▶ 978-3-540-04128-3

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D. Landers, Universität Köln; L. Rogge, Universität-Gesamthochschule-Duisburg

Nichtstandard Analysis

Die Nichtstandard-Mathematik hat in den letzten Jahren einen gewaltigen Aufschwung erfahren und die Entwicklungen in den verschiedenartigsten Gebieten beeinflusst und befruchtet. Mit diesem Lehrbuch liegt nun die erste umfassende und leicht verständliche Einführung in dieses Thema in deutscher Sprache vor. An Vorkenntnissen braucht der Leser für ein gewinnbringendes Selbststudium nichts weiter als Grundkenntnisse in Linearer Algebra und Analysis, d.h. Kenntnisse des ersten Studienjahres. Ausführliche Beweise, viele Aufgaben mit Lösungen und eine gelungene didaktische Aufbereitung des Stoffes machen Methoden und Erkenntnisse durchsichtig und verständlich.

1994. X, 485 S. (Springer-Lehrbuch) Brosch.

ISBN ▶ 978-3-540-57115-5

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M. Ruzicka, Universität Freiburg

Nichtlineare Funktionalanalysis

Eine Einführung

Die Themenauswahl in diesem Lehrbuch zur nichtlinearen Funktionalanalysis umfasst Methoden und Techniken, die bei der Untersuchung von nichtlinearen elliptischen und parabolischen partiellen Differentialgleichungen benutzt werden. Die Einführung behandelt insbesondere Fixpunktsätze, Differentiation und Integration in Banachräumen, monotone Operatoren und den Abbildungsgrad. Kurze Einführungen am Kapitelanfang, illustrative Beispiele sowie die detaillierte Herleitung von Ergebnissen erleichtern das Verständnis. Ein Appendix mit einer Kurzzusammenfassung von Ergebnissen aus der linearen Funktionalanalysis rundet die Darstellung ab.

2004. XII, 208 S. 10 Abb. Brosch.

ISBN ▶ 978-3-540-20066-6

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F. Sauvigny, Technische Universität Cottbus

Partielle Differentialgleichungen der Geometrie und der Physik 1

Grundlagen und Integraldarstellungen

Das zweibändige Lehrbuch stellt das Gesamtgebiet der partiellen Differentialgleichungen vom elliptischen, parabolischen und hyperbolischen Typ in zwei und mehreren Veränderlichen vor. Während in diesem Band die partiellen Differentialgleichungen mit Integraldarstellungen gelöst werden, sollen im nächsten Band funktionalanalytische Lösungsmethoden vorgestellt werden. Für Studenten und Dozenten der Mathematik und Physik ab dem 3. Fachsemester.

2004. XII, 418 S. Brosch.
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H. Schneeweiß, H. Mittag

Lineare Modelle mit Fehlerbehafteten Daten

1986. 50 Abb. (Physica-Lehrbuch) Brosch.
ISBN ► 978-3-7908-0320-4

List price

► € 46,68 | £36,00
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Sale price

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E. Wittl. Kersten, Universität Bielefeld (Hrsg.)

Collected Papers - Gesammelte Abhandlungen

Ernst Witt war ein außergewöhnlich vielseitiger, ideenreicher und origineller Mathematiker. Er hat der Entwicklung der Mathematik in diesem Jahrhundert entscheidende Impulse gegeben. Eine seiner großen Stärken war, Mathematik kurz, elegant und ökonomisch aufzuschreiben und dabei den Blick des Lesers stets auf das für das Verständnis Wesentliche zu lenken. Diese Gesammelten Abhandlungen enthalten alle seine Arbeiten, einige seiner unveröffentlichten Manuskripte, einen ausführlichen Lebenslauf, Faksimiles und Fotos. Detaillierte Kommentare verschiedener Autoren (auf englisch) beleuchten Witts Arbeiten aus heutiger Sicht. Das Buch ist eine Fundgrube für Mathematiker, die Aktuelles lernen möchten und für solche, die an Mathematikgeschichte interessiert sind.

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Centro Stefano Francisci, Ascona, May 2002

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