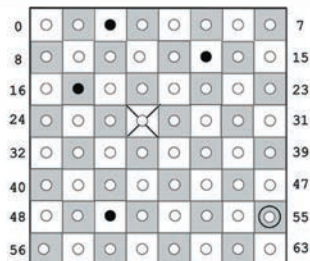
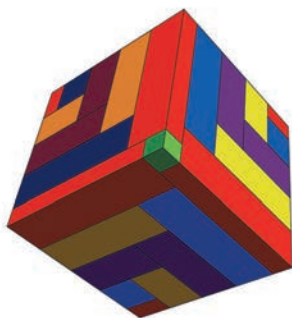
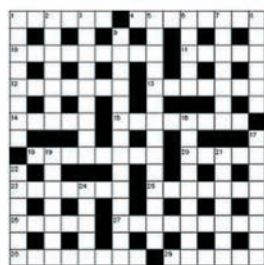
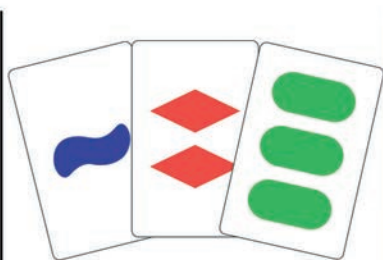
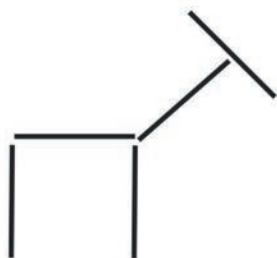


Mathematics

2017



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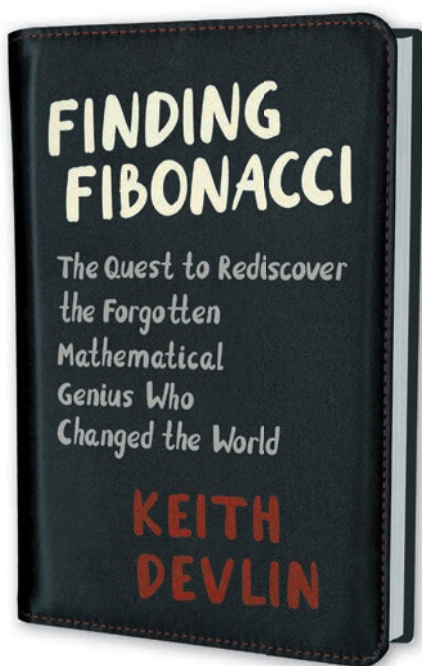
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Forthcoming

Finding Fibonacci

The Quest to Rediscover the Forgotten Mathematical
Genius Who Changed the World

Keith Devlin

"A charmingly personal account of Keith Devlin's long quixotic search to understand the man, Leonardo Bonacci, better known as Fibonacci, as well as the thirteenth-century mathematician's surprisingly pervasive influence."—John Allen Paulos, author of *Innumeracy* and *A Numerate Life*

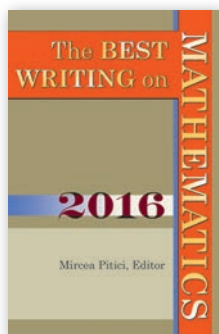
"An unusual and fascinating personal account of a modern mathematician's quest to separate truth from myth and show us the real 'Fibonacci.'" —Ian Stewart, author of *Professor Stewart's Incredible Numbers*

In 2000, Keith Devlin set out to research the life and legacy of the medieval mathematician Leonardo of Pisa, popularly known as Fibonacci, whose book *Liber abbaci* has quite literally affected the lives of everyone alive today. Although he is most famous for the Fibonacci numbers—which, it so happens, he didn't invent—Fibonacci's greatest contribution was as an expositor of mathematical ideas at a level ordinary people could understand. In 1202, *Liber abbaci*—the "Book of Calculation"—introduced modern arithmetic to the Western world. Yet Fibonacci was long forgotten after his death, and it was not until the 1960s that his true achievements were finally recognized. *Finding Fibonacci* is Devlin's compelling firsthand account of his ten-year quest to tell Fibonacci's story.

April 2017. 256 pages. 22 halftones.

Cl: 978-0-691-17486-0 \$29.95 | £22.95

Catalog cover art: clockwise: Row 1, fig. 1: courtesy of Anany Levitin; fig. 2: cards and game, c. 1988, 1991. Cannei, LLC. All rights reserved. SET and all associated logos and tag lines are registered trademarks of Cannei, LLC. Used with permission from SET Enterprises, Inc.; fig. 3: courtesy of John K. McSweeney. Row 2, fig. 4: courtesy of Robert Bosch; fig. 5: courtesy of Burr Tools/Andreas Röver; fig. 6: courtesy of Anany Levitin. Row 3, fig. 7: courtesy of O. Encke, www.encke.net; fig. 8: courtesy of Anany Levitin; fig. 9: courtesy of Jennifer Beineke and Lowell Beineke. Artwork featured on the cover of *The Mathematics of Various Entertaining Subjects: Research in Recreational Math* edited by Jennifer Beineke and Jason Rosenhouse (see page 10).



Forthcoming
The Best Writing on Mathematics 2016
Edited by Mircea Pitici

Praise for previous editions:

"Wonderful... [C]annot be recommended highly enough!"

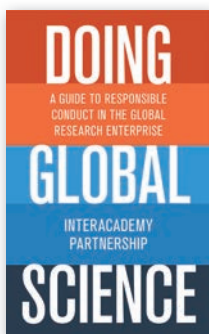
—Robert Schaefer, *New York Journal of Books*

This annual anthology brings together the year's finest mathematics writing from around the world. *The Best Writing on Mathematics 2016* makes available to a wide audience many articles not easily found anywhere else. Here Burkard Polster shows how to invent your own variants of the Spot It! card game, Steven Strogatz presents young Albert Einstein's proof of the Pythagorean Theorem, Joseph Dauben and Marjorie Senechal find a treasure trove of math in New York's Metropolitan Museum of Art, and Andrew Gelman explains why much scientific research based on statistical testing is spurious.

March 2017. 408 pages. 119 color illus.
12 halftones. 31 line illus. 2 tables.
Pa: 978-0-691-17529-4 \$32.95 | £24.95

The Best Writing on Mathematics 2015
Edited by Mircea Pitici

2015. 408 pages. 16 color illus. 10 halftones.
95 line illus.
Pa: 978-0-691-16965-1 \$24.95 | £18.95

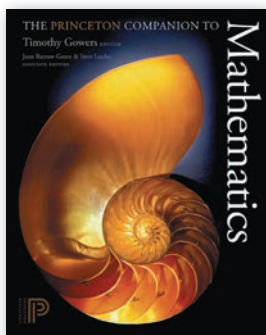


New
Doing Global Science
A Guide to Responsible Conduct in the Global Research Enterprise
InterAcademy Partnership

"[W]ill help younger generations keep their enthusiasm and values intact as they progress in their careers."

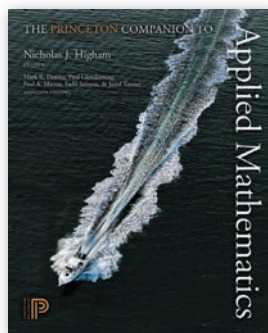
—Elisabeth Pain, *Science*

2016. 192 pages. 11 line illus.
Cl: 978-0-691-17075-6 \$14.95 | £11.50



The Princeton Companion to Mathematics
Edited by Timothy Gowers
June Barrow-Green & Imre Leader, associate editors

2008. 1056 pages. 20 halftones. 160 line illus.
Cl: 978-0-691-11880-2 \$99.50 | £74.95
Winner of the 2011 Euler Book Prize,
Mathematical Association of America
One of Choice's Outstanding Academic
Titles for 2009
Honorable Mention, 2008 PROSE Award
for Excellence in Single-Volume Reference/
Science, Association of American Publishers



The Princeton Companion to Applied Mathematics
Edited by Nicholas J. Higham
Mark R. Dennis, Paul Glendinning, Paul A. Martin, Fadil Santosa & Jared Tanner, associate editors

This is the most authoritative and accessible single-volume reference book on applied mathematics. Featuring numerous entries by leading experts and organized thematically, it introduces readers to applied mathematics and its uses; explains key concepts; describes important equations, laws, and functions; looks at exciting areas of research; covers modeling and simulation; explores areas of application; and more. Modeled on the popular *Princeton Companion to Mathematics*, this volume is an indispensable resource.

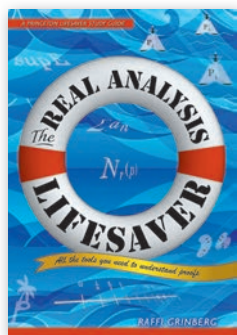
2015. 1032 pages. 23 color illus. 20 halftones.
160 line illus.
Cl: 978-0-691-15039-0 \$99.50 | £74.95

The 5 Elements of Effective Thinking
Edward B. Burger & Michael Starbird

"[S]hould appeal to anyone who has ever dreamed of being a genius and is willing to strive, step by step, to become one."

—David Wilson, *South China Morning Post*

2012. 168 pages. 1 halftone.
Cl: 978-0-691-15666-8 \$19.95 | £14.95
Winner of the 2013 Silver Medal in Self-Help, Independent Publisher



New

The Real Analysis Lifesaver

All the Tools You Need to Understand Proofs

Raffi Grinberg

"This book is a great resource that every real analysis student should have. Grinberg writes like a professor would speak to a student during office hours."

—Oscar E. Fernandez, author of *Everyday Calculus*

"Grinberg's accessible book gives beginning real analysis students the leg up they need."

—Mark McConnell, Princeton University

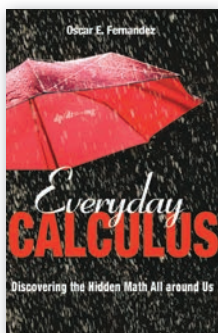
Real analysis is difficult. For most students, in addition to learning new material about real numbers, topology, and sequences, they are also learning to read and write rigorous proofs for the first time. *The Real Analysis Lifesaver* is an innovative guide that helps students through their first real analysis course while giving them the solid foundation they need for further study in proof-based math.

Inspired by the popular *Calculus Lifesaver*, this book is refreshingly straightforward and full of clear explanations, pictures, and humor. It is the lifesaver that every drowning student needs.

Princeton Lifesaver Study Guides

2016. 200 pages. 33 line illus.

Pa: 978-0-691-17293-4 \$27.95 | £19.95
Cl: 978-0-691-17387-0 \$75.00 | £55.95



Forthcoming in Paperback

Everyday Calculus

Discovering the Hidden Math All around Us

Oscar E. Fernandez

With a new preface by the author

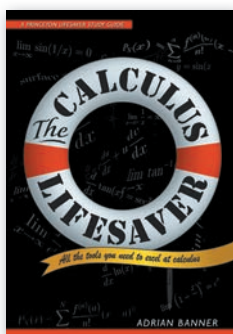
"[C]ontains something for everyone.... [W]ill certainly open the eyes of any reader who wishes to appreciate the mathematics and calculus which surrounds us."

—*Mathematics Today*

"Fernandez is a delightfully quirky writer and his book *Everyday Calculus* is lighthearted and compelling."

—*New York Journal of Books*

March 2017. 168 pages. 47 line illus. 1 table.
Pa: 978-0-691-17575-1 \$17.95 | £13.95
Cl: 978-0-691-15755-9 \$24.95 | £18.95



The Calculus Lifesaver

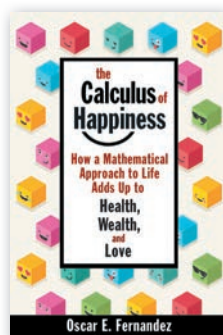
All the Tools You Need to Excel at Calculus

Adrian Banner

Princeton Lifesaver Study Guides

2007. 752 pages. 350 line illus.

Pa: 978-0-691-13088-0 \$24.95 | £18.95



Forthcoming

The Calculus of Happiness

How a Mathematical Approach to Life Adds Up to Health, Wealth, and Love

Oscar E. Fernandez

"I absolutely love this book.

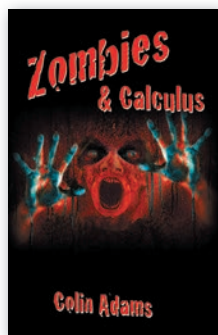
The mathematics described is beautiful and accessible and, most important of all, truly meaningful and relevant."

—James Tanton, author of *Without Words: Mathematical Puzzles to Confound and Delight*

What's the best diet for overall health and weight management? How can we change our finances to retire earlier? How can we maximize our chances of finding our soul mate? In *The Calculus of Happiness*, Oscar Fernandez shows us that math yields powerful insights into health, wealth, and love. Using only high-school-level math (precalculus with a dash of calculus), Fernandez guides us through several of the surprising results, including an easy rule of thumb for choosing foods that lower our risk for developing diabetes (and that help us lose weight too), simple "all-weather" investment portfolios with great returns, and math-backed strategies for retiring earlier and finding our soul mate.

May 2017. 168 pages. 1 halftone. 13 line illus. 14 tables.

Cl: 978-0-691-16863-0 \$24.95 | £18.95



New in Paperback
Zombies and Calculus
 Colin Adams

"You'll laugh! You'll cry! You'll use calculus! So much for kids who say, 'When am I ever going to use calculus?' When you're trying to survive the zombie apocalypse, that's when."

—Nancy Szokan, *Washington Post*

"Adams is a craftsman of the first order.... Two bloody thumbs up!"

—Robert Schaefer, *New York Journal of Books*

How can calculus help you survive the zombie apocalypse? Colin Adams, one of today's most outlandish and entertaining popular math writers, demonstrates how in this zombie adventure novel.

2016. 240 pages. 47 line illus.

Pa: 978-0-691-17320-7 \$18.95 | £14.95

Cl: 978-0-691-16190-7 \$24.95 | £18.95

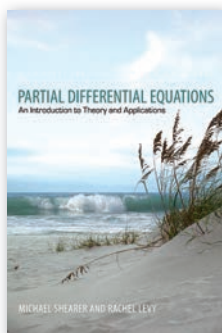
Calculus of Variations and Optimal Control Theory
 A Concise Introduction
 Daniel Liberzon

"If you plan to teach a first course to advanced students on the calculus of variations and optimal control and you like the selection of topics that the author has chosen to present (and I do), it is the text you need."

—Zvi Artstein, *Mathematical Reviews Clippings*

2012. 256 pages. 63 line illus.

Cl: 978-0-691-15187-8 \$90.00 | £66.95



Partial Differential Equations

An Introduction to Theory and Applications

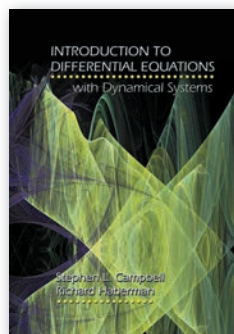
Michael Shearer & Rachel Levy

"Presented in a new and innovative way, stressing more modern ideas in PDEs while keeping the approach accessible. Superior illustrations accompany important concepts."

—David Uminsky, University of San Francisco

2015. 288 pages. 49 line illus.

Cl: 978-0-691-16129-7 \$85.00 | £62.95



Introduction to Differential Equations with Dynamical Systems

Stephen L. Campbell & Richard Haberman

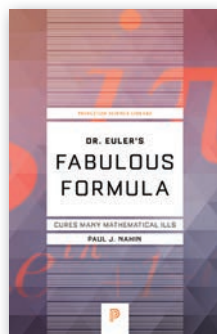
"[C]lear and well illustrated."

—Robert E. O'Mally, Jr., *SIAM Review*

2008. 444 pages. 150 line illus.

Cl: 978-0-691-12474-2 \$125.00 | £92.95

Not for sale in South Asia



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 Cures Many Mathematical Ills
 Paul J. Nahin

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—Timothy Gowers, *Nature*

"What a treasure of a book this is!"

—Henry Ricardo, *MAA Reviews*

In the mid-eighteenth century, Swiss-born mathematician Leonhard Euler developed a formula so innovative and complex that it continues to inspire research, discussion, and even the occasional limerick. *Dr. Euler's Fabulous Formula* shares the fascinating story of this groundbreaking formula—long regarded as the gold standard for mathematical beauty—and shows why it still lies at the heart of complex number theory. In some ways a sequel to Nahin's *An Imaginary Tale*, this book examines the many applications of complex numbers alongside intriguing stories from the history of mathematics. *Dr. Euler's Fabulous Formula* promises to inspire mathematicians for years to come.

April 2017. 416 pages. 77 line illus. 2 halftones.

Pa: 978-0-691-17591-1 \$22.95 | £17.95

Forthcoming

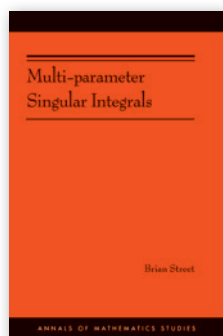
The Mathematics of Shock Reflection-Diffraction and von Neumann's Conjectures

Gui-Qiang G. Chen & Mikhail Feldman

This book offers a survey of recent developments in the analysis of shock reflection-diffraction. Presenting recently developed approaches and techniques, this book opens up new research opportunities.

Annals of Mathematics Studies, 197
Phillip A. Griffiths, John N. Mather, and
Elias M. Stein, Series Editors

July 2017. 776 pages. 35 line illus.
Pa: 978-0-691-16055-9 \$75.00 | £55.95
Cl: 978-0-691-16054-2 \$165.00 | £122.95



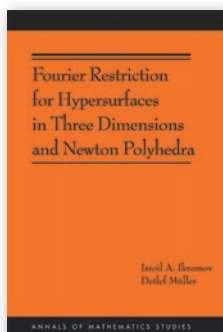
Multi-parameter Singular Integrals

Brian Street

This book develops a new theory of multi-parameter singular integrals associated with Carnot-Carathéodory balls. This is one of the first general theories of multi-parameter singular integrals that goes beyond the product theory of singular integrals and their analogs.

Annals of Mathematics Studies, 189
Phillip A. Griffiths, John N. Mather, and
Elias M. Stein, Series Editors

2014. 412 pages. 7 line illus.
Pa: 978-0-691-16252-2 \$75.00 | £55.95



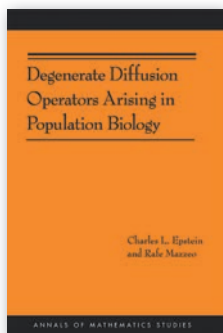
New

Fourier Restriction for Hypersurfaces in Three Dimensions and Newton Polyhedra

Isroil A. Ikromov & Detlef Müller

Annals of Mathematics Studies, 194
Phillip A. Griffiths, John N. Mather, and
Elias M. Stein, Series Editors

2016. 272 pages. 7 line illus.
Pa: 978-0-691-17055-8 \$75.00 | £55.95
Cl: 978-0-691-17054-1 \$165.00 | £122.95

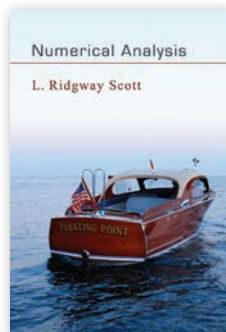


Degenerate Diffusion Operators Arising in Population Biology

Charles L. Epstein & Rafe Mazzeo

Annals of Mathematics Studies, 185
Phillip A. Griffiths, John N. Mather, and
Elias M. Stein, Series Editors

2013. 320 pages. 3 line illus.
Pa: 978-0-691-15715-3 \$87.50 | £65.95
Cl: 978-0-691-15712-2 \$190.00 | £140.95



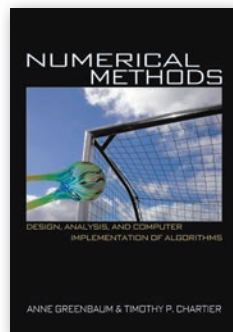
Numerical Analysis

L. Ridgway Scott

"A student who picks up this book and works through it systematically will learn a lot of interesting and important mathematics."

—David S. Watkins, *SIAM Review*

2011. 344 pages. 33 line illus. 11 tables.
Cl: 978-0-691-14686-7 \$95.00 | £70.95



Numerical Methods

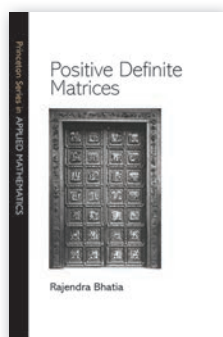
Design, Analysis, and Computer Implementation of Algorithms

Anne Greenbaum & Timothy P. Chartier

"An instructor could assemble several different one-semester courses using this book.... This is a charming book, well worth consideration for the next numerical analysis course."

—William J. Sater, *MAA Focus*

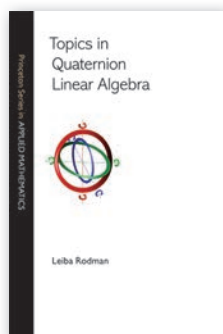
2012. 472 pages. 78 halftones. 145 line illus.
Cl: 978-0-691-15122-9 \$115.00 | £85.95



Positive Definite Matrices
Rajendra Bhatia

Princeton Series in Applied Mathematics
Ingrid Daubechies, Weinan E, Jan Karel Lenstra,
and Endre Süli, Series Editors

2015. 264 pages.
Pa: 978-0-691-16825-8 \$35.00 | £24.95



**Topics in Quaternion
Linear Algebra**
Leiba Rodman

Princeton Series in Applied Mathematics
Ingrid Daubechies, Weinan E, Jan Karel Lenstra,
and Endre Süli, Series Editors

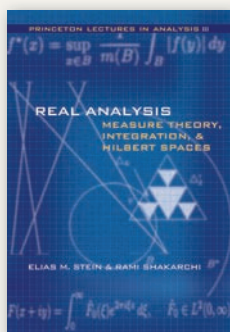
2014. 384 pages.
Cl: 978-0-691-16185-3 \$79.50 | £59.95
One of Choice's Outstanding Academic
Titles for 2015

Advances in Analysis
The Legacy of Elias M. Stein
Edited by Charles Fefferman,
Alexandru D. Ionescu, D. H.
Phong & Stephen Wainger

Princeton Mathematical Series, 50
Phillip A. Griffiths, John N. Mather, and
Elias M. Stein, Series Editors

2014. 480 pages, 6 halftones, 32 line illus.
Cl: 978-0-691-15941-6 \$105.00 | £77.95

"We are all fortunate that a mathematician with the experience and vision of E.M. Stein, together with his energetic young collaborator R. Shakarchi, has given us this series of four books on analysis."
— Steven George Krantz, *Mathematical Reviews*



Real Analysis
Measure Theory, Integration,
and Hilbert Spaces

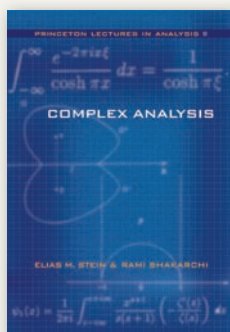
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Rami Shakarchi

"This series is a result of a radical rethinking of how to introduce graduate students to analysis.... This volume lives up to the high standard set up by the previous ones."

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Review

2005. 392 pages, 51 line illus.
Cl: 978-0-691-11386-9 \$99.95 | £74.95
Not for sale in South Asia



Complex Analysis

Elias M. Stein &
Rami Shakarchi

2003. 392 pages, 64 line illus.
Cl: 978-0-691-11385-2 \$99.95 | £74.95
Not for sale in South Asia

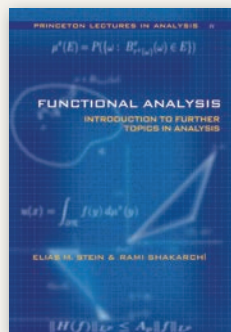
Functional Analysis
Introduction to Further Topics
in Analysis

Elias M. Stein &
Rami Shakarchi

"Functional Analysis ... is a fast-paced book on functional analysis and related topics. By page 60, you've had a decent course in functional analysis and you've got 360 pages left."

—John D. Cook, *Endeavour* blog

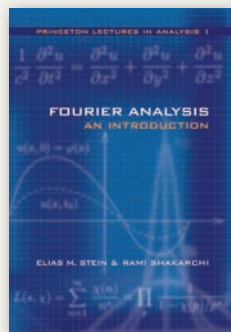
2011. 448 pages, 27 line illus.
Cl: 978-0-691-11387-6 \$99.95 | £74.95

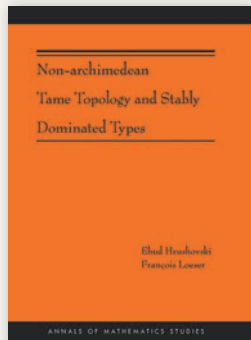


Fourier Analysis
An Introduction

Elias M. Stein &
Rami Shakarchi

2003. 320 pages, 40 line illus.
Cl: 978-0-691-11384-5 \$99.95 | £74.95
Not for sale in South Asia





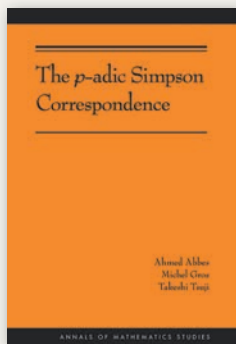
New

Non-Archimedean Tame Topology and Stably Dominated Types

Ehud Hrushovski & François Loeser

Over the field of real numbers, analytic geometry has long been in deep interaction with algebraic geometry. In recent decades, model theory has joined this work through the theory of o-minimality, providing finiteness and uniformity statements and new structural tools. This book lays down model-theoretic foundations for non-archimedean geometry. The methods combine o-minimality and stability theory.

2016. 232 pages.
Pa: 978-0-691-16169-3 \$75.00 | £55.95
Cl: 978-0-691-16168-6 \$165.00 | £122.95



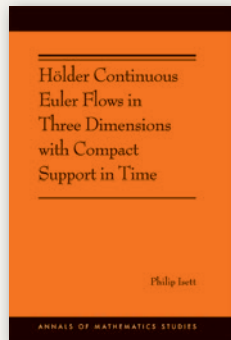
New

The p -adic Simpson Correspondence

Ahmed Abbes, Michel Gros & Takeshi Tsuji

The p -adic Simpson correspondence, recently initiated by Gerd Faltings, aims at describing all p -adic representations of the fundamental group of a proper smooth variety over a p -adic field in terms of linear algebra—namely Higgs bundles. This book undertakes a systematic development of the theory following two new approaches, one by Ahmed Abbes and Michel Gros, the other by Takeshi Tsuji.

2016. 618 pages.
Pa: 978-0-691-17029-9 \$75.00 | £55.95
Cl: 978-0-691-17028-2 \$165.00 | £122.95



Forthcoming

Hölder Continuous Euler Flows in Three Dimensions with Compact Support in Time

Philip Isett

Motivated by the theory of turbulence in fluids, the physicist and chemist Lars Onsager conjectured in 1949 that weak solutions to the incompressible Euler equations might fail to conserve energy if their spatial regularity was below $1/3$ -Hölder. In this book, Philip Isett uses the method of convex integration to achieve the best-known results regarding nonuniqueness of solutions and Onsager's conjecture.

April 2017. 224 pages.
Pa: 978-0-691-17483-9 \$75.00 | £55.95
Cl: 978-0-691-17482-2 \$165.00 | £122.95

annals of mathematics journal

Edited by Charles Fefferman, David Gabai, Nicholas M. Katz, Sergiu Klainerman, Peter Sarnak & Gang Tian

Associate Editors: Alexei Borodin, Étienne Ghys, Robert Guralnick, Christopher Hacon, William Minicozzi & Horng-Tzer Yau

Founded in 1884, this distinguished bimonthly journal of research papers in mathematics is published by the Department of Mathematics of Princeton University with the cooperation of the Institute for Advanced Study.

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Lou van den Dries &
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June 2017. 880 pages. 12 line illus.

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Brian Conrad & Gopal Prasad

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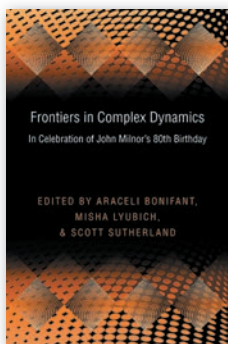
"[T]akes students on a journey from a standard mathematical education into the realm of active and lively research, encouraging them to jump right into the thick of the subject.... Students will enjoy the ride."

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Frontiers in Complex Dynamics

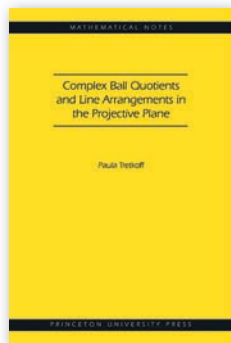
In Celebration of John Milnor's 80th Birthday

Edited by Araceli Bonifant,
Mikhail Lyubich &
Scott Sutherland

Princeton Mathematical Series, 51
Phillip A. Griffiths, John N. Mather, and
Elias M. Stein, Series Editors

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New

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Paula Tretkoff
With an appendix by
Hans-Christoph Im Hof

This book introduces the theory of complex surfaces through a comprehensive look at finite covers of the projective plane branched along line arrangements. Paula Tretkoff emphasizes those finite covers that are free quotients of the complex two-dimensional ball. Tretkoff also includes background on the classical Gauss hypergeometric function of one variable, and a chapter on the Appell two-variable F_1 hypergeometric function.

Mathematical Notes
Phillip A. Griffiths, John N. Mather, and
Elias M. Stein, Series Editors

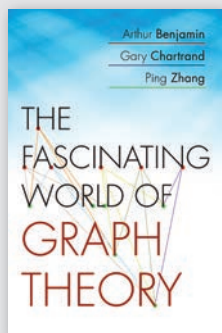
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Pa: 978-0-691-14477-1 \$75.00 | £55.95

Hodge Theory

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Fouad El Zein, Phillip A.
Griffiths & Lê Dũng Tráng

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Phillip A. Griffiths, John N. Mather, and
Elias M. Stein, Series Editors

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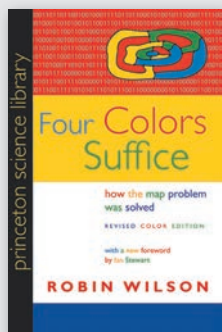


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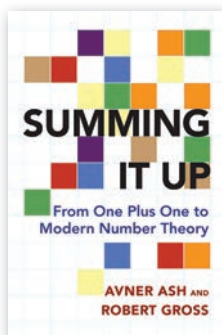
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 Pa: 978-0-691-15822-8 \$25.95 | £19.95



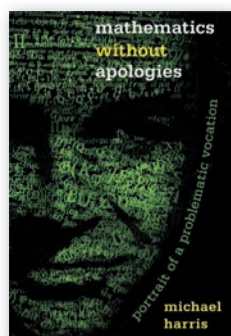
New
Summing It Up
 From One Plus One to Modern Number Theory
 Avner Ash & Robert Gross

“Ash and Gross, with their customary charm and clarity, build an impressive tower from the most basic mathematical story imaginable. They start by adding up finite sequences and whole numbers before journeying to the upper reaches of contemporary developments in number theory.”

—Jordan Ellenberg, author of *How Not to Be Wrong: The Power of Mathematical Thinking*

We use addition on a daily basis—yet how many of us stop to truly consider the enormous and remarkable ramifications of this mathematical activity? *Summing It Up* uses addition as a springboard to present a fascinating and accessible look at numbers and number theory, and how we apply beautiful numerical properties to answer math problems. Mathematicians Avner Ash and Robert Gross explore addition’s most basic characteristics as well as the addition of squares and other powers before moving onward to infinite series, modular forms, and issues at the forefront of current mathematical research. *Summing It Up* delves into mathematics that will enlighten anyone fascinated by numbers.

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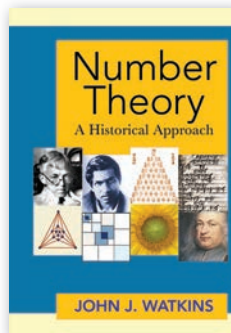
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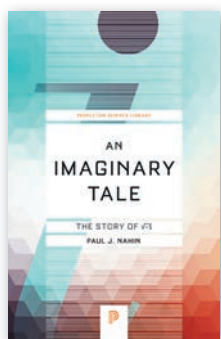


Number Theory
 A Historical Approach
 John J. Watkins

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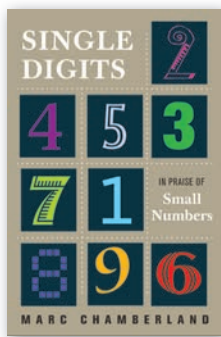
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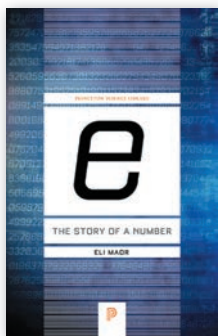


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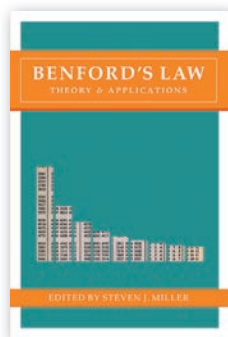
June 2017. 240 pages. 24 halftones.
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Honorable Mention for the 1994 Award for Best Professional/Scholarly Book in Mathematics, Association of American Publishers

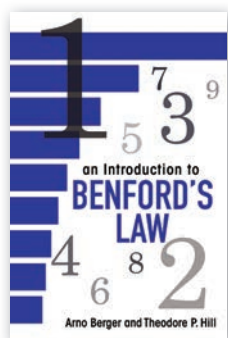


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With a foreword by Raymond Smullyan

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The Autobiography of Martin Gardner

Martin Gardner

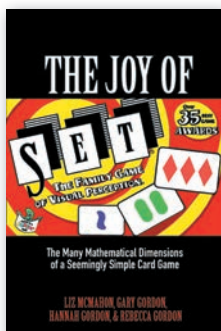
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The Many Mathematical Dimensions of a Seemingly Simple Card Game

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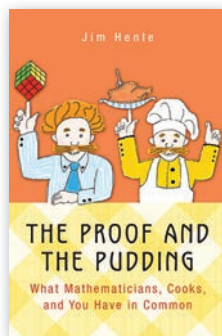
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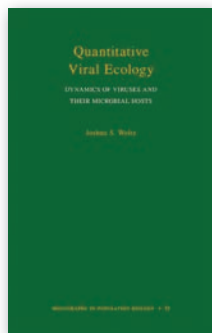
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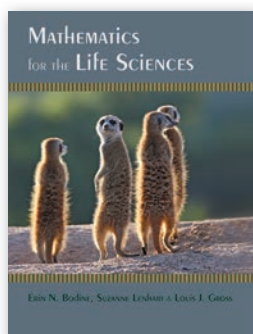
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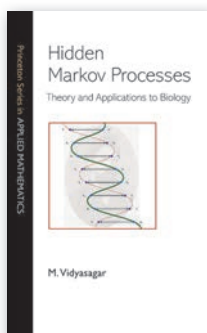


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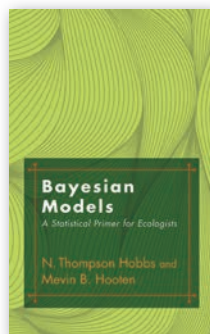
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“We’d all be better off if we could forecast the future state of complex systems such as the weather, our health, and the stock market. Dietze shows us how to approach forecasting using models based on large datasets and make the results easy to digest. This book is certain to be a benchmark in the science of ecological forecasting for decades to come.”

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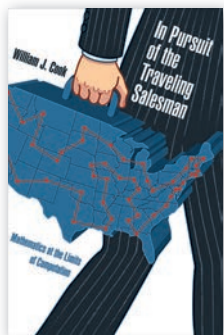
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This book provides a short, hands-on introduction to the science of complexity using simple computational models of natural complex systems—with models and exercises drawn from physics, chemistry, geology, and biology.

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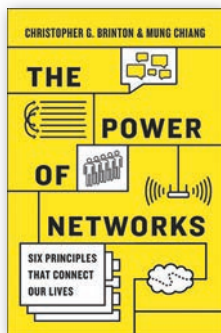
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New

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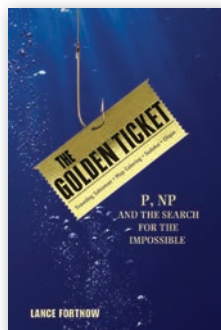
Christopher G. Brinton & Mung Chiang

"As humans, we are 'networked' by nature. Our bodies are networked from head to toe by the most sophisticated network that exists, and the value of networking was even understood by our ancestors as they began to network in order to hunt more efficiently. *The Power of Networks* explains how six basic networking principles connect our lives almost as an extension of our primordial instincts... It is an absolutely intriguing book."

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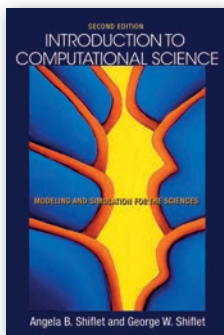
—Vint Cerf, Internet Pioneer

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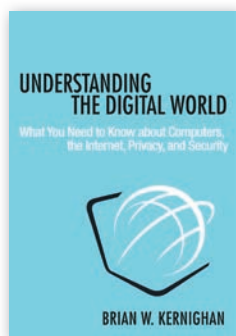
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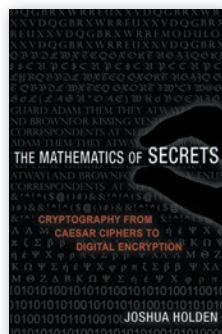
John MacCormick

With a foreword by
Chris Bishop

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Forthcoming

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Cryptography from Caesar Ciphers to Digital Encryption
Joshua Holden

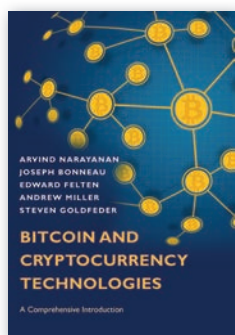
"Suitable for anyone with a basic understanding of high school math, *The Mathematics of Secrets* presents the theoretical principles of cryptography, from Julius Caesar's primitive cipher to the intricacies of the modern digital signature. This terrific book is a testament to the almost supernatural power of mathematics."

—Paul J. Nahin, author of *In Praise of Simple Physics*

The Mathematics of Secrets takes readers on a fascinating tour of the mathematics behind cryptography—the science of sending secret messages. Most books about cryptography are organized historically, or around how codes and ciphers have been used, such as in government and military intelligence or bank transactions. Joshua Holden instead shows how mathematical principles underpin the ways that different codes and ciphers operate. Holden focuses on both code making and code breaking and he discusses the majority of ancient and modern ciphers currently known.

February 2017. 374 pages. 3 halftones. 94 line illus. 16 tables.

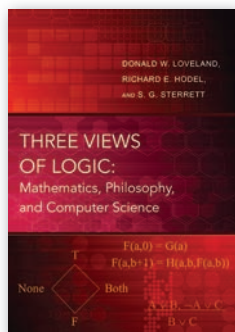
Cl: 978-0-691-14175-6 \$29.95 | £22.95



New
Bitcoin and Cryptocurrency Technologies
 A Comprehensive Introduction
Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller & Steven Goldfeder

"Block chain technology is set to disrupt many different industries. If you want to get up to speed on this fast-moving technology, this book should be your first stop."
 —Campbell R. Harvey, Duke University

2016. 336 pages. 11 halftones. 86 line illus. 7 tables.
 Cl: 978-0-691-17169-2 \$49.50 | £37.95



Three Views of Logic
 Mathematics, Philosophy, and Computer Science
Donald W. Loveland, Richard E. Hodel & S. G. Sterrett

2014. 344 pages. 7 line illus. 10 tables.
 Pa: 978-0-691-16044-3 \$49.50 | £37.95

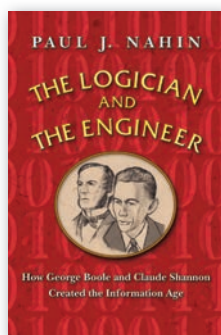


Forthcoming
Unsolved!
 The History and Mystery of the World's Greatest Ciphers from Ancient Egypt to Online Secret Societies
Craig Bauer

"Exceptional. Not only are these ciphers fascinating individually, but together they provide a comprehensive picture of the different methods and types of encryption."
 —Todd S. Sauter, former docent at the National Cryptologic Museum

In 1953, a man was found dead from cyanide poisoning near the Philadelphia airport with a picture of a Nazi aircraft in his wallet. Taped to his abdomen was an enciphered message. In 1912, a book dealer named Wilfrid Voynich came into possession of an illuminated cipher manuscript once belonging to Emperor Rudolf II, who was obsessed with alchemy and the occult. Wartime codebreakers tried—and failed—to unlock the book's secrets, and it remains an enigma to this day. In this lively and entertaining book, Craig Bauer examines these and other vexing ciphers yet to be cracked. Some may reveal the identity of a spy or serial killer, provide the location of buried treasure, or expose a secret society—while others may be elaborate hoaxes.

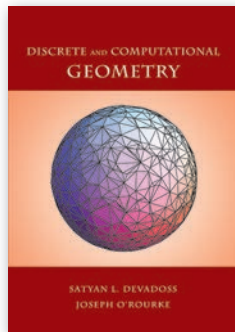
June 2017. 600 pages. 222 halftones. 8 line illus. 17 tables.
 Cl: 978-0-691-16767-1 \$35.00 | £24.95



Forthcoming in Paperback
The Logician and the Engineer
 How George Boole and Claude Shannon Created the Information Age
Paul J. Nahin

"Meshing logic problems with the stories of two extraordinary men ... Paul Nahin fashions a tale of innovation and discovery. Alongside a gripping account of how Shannon built on Boole's work, Nahin explores others key to the technological revolution, from Georg Cantor to Alan Turing."
 —*Nature*

April 2017. 248 pages. 2 halftones. 41 line illus. 25 tables.
 Pa: 978-0-691-17600-0 \$17.95 | £13.95
 Cl: 978-0-691-15100-7 \$24.95 | £18.95



Discrete and Computational Geometry
Satyan L. Devadoss & Joseph O'Rourke

2011. 272 pages. 182 color illus. 4 line illus. 7 tables.
 Cl: 978-0-691-14553-2 \$78.50 | £58.95

Forthcoming

Rays, Waves, and Scattering

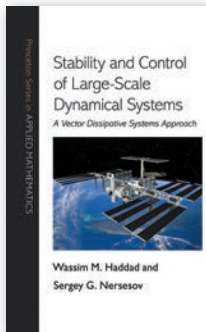
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Mathematical Physics

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"Adam has chosen only the most interesting parts of the subject, especially those masterpieces of elegance that draw people to advanced physics in the first place."
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A Vector Dissipative Systems
Approach

Wassim M. Haddad &
Sergey G. Nersisov

Princeton Series in Applied Mathematics
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and Endre Süli, Series Editors

2012. 392 pages. 60 line illus. 3 tables.
Cl: 978-0-691-15346-9 \$120.00 | £88.95
Wassim Haddad, Winner of the 2014
Pendray Aerospace Literature Award,
American Institute of Aeronautics and
Astronautics

Forthcoming

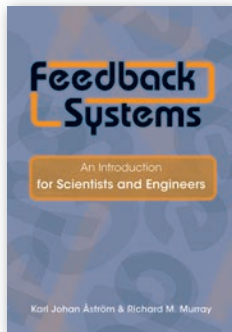
Noncooperative Game Theory

An Introduction for Engineers
and Computer Scientists

João P. Hespanha

Noncooperative Game Theory is aimed at students interested in using game theory as a design methodology for solving problems in engineering and computer science.

June 2017. 248 pages. 35 line illus. 4 tables.
Cl: 978-0-691-17521-8 \$65.00 | £48.95



Feedback Systems

An Introduction for Scientists
and Engineers

Karl Johan Åström &
Richard M. Murray

2008. 408 pages. 24 halftones. 183 line illus.
5 tables.
Cl: 978-0-691-13576-2 \$87.50 | £65.95
Not for sale in South Asia

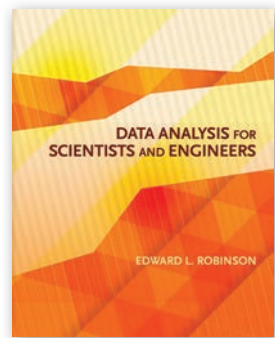
Winner of the 2011 Harold Chestnut
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International Federation of Automatic
Control

Matrix Completions, Moments, and Sums of Hermitian Squares

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Hugo J. Woerdeman

Princeton Series in Applied Mathematics
Ingrid Daubechies, Weinan E, Jan Karel Lenstra,
and Endre Süli, Series Editors

2011. 536 pages. 5 line illus.
Cl: 978-0-691-12889-4 \$97.50 | £72.95



New

Data Analysis for Scientists and Engineers

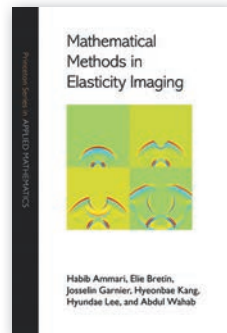
Edward L. Robinson

"[A]n excellent overview of modern statistical techniques ... sure to become a definitive reference."
—Jeremy Kasdin, Princeton University

"*Data Analysis for Scientists and Engineers* stands out for its depth of materials and pedagogical presentation."

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Cl: 978-0-691-16992-7 \$75.00 | £55.95

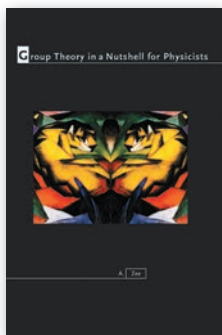


Mathematical Methods in Elasticity Imaging

Habib Ammari, Elie Bretin,
Josselin Garnier, Hyeonbae Kang,
Hyundaee Lee &
Abdul Wahab

Princeton Series in Applied Mathematics
Ingrid Daubechies, Weinan E, Jan Karel Lenstra,
and Endre Süli, Series Editors

2015. 240 pages. 22 halftones. 9 line illus.
1 table.
Cl: 978-0-691-16531-8 \$65.00 | £48.95



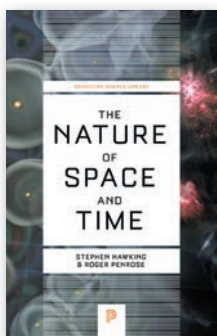
New
Group Theory in a Nutshell for Physicists
A. Zee

"Zee's lovely book on the theory of group representations is comprehensive and complete, both from the mathematical and physical points of view. Clearly written, this book makes an ideal text for a graduate course in physics on the subject."

—Barry Simon, California Institute of Technology

In a Nutshell

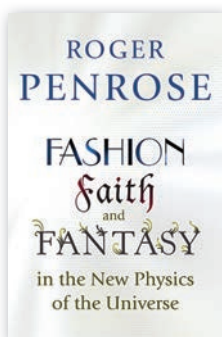
2016. 632 pages. 3 halftones. 65 line illus.
Cl: 978-0-691-16269-0 \$90.00 | £66.95
Not for sale in China and Taiwan



The Nature of Space and Time
Stephen Hawking & Roger Penrose
With an afterword by the authors

Princeton Science Library

2015. 160 pages. 75 line illus.
Pa: 978-0-691-16844-9 \$14.95 | £11.50



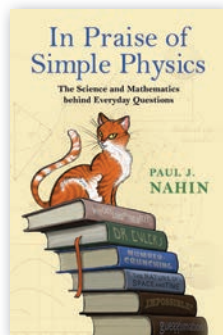
New
Fashion, Faith, and Fantasy in the New Physics of the Universe
Roger Penrose

"In standing outside the fray and criticising the central dogmas of fundamental physics, Penrose is playing the role of Einstein, who forced quantum theorists to defend and hone their ideas, and Sir Fred Hoyle, who persistently challenged Big Bang theorists to sharpen their ideas. This is an extremely important role, and long may Penrose fulfill it."

—Marcus Chown, *Times Higher Education*

What can fashionable ideas, blind faith, or pure fantasy possibly have to do with the scientific quest to understand the universe? Surely, theoretical physicists are immune to mere trends, dogmatic beliefs, or flights of fancy? In fact, acclaimed physicist and bestselling author Roger Penrose argues that researchers working at the extreme frontiers of physics are just as susceptible to these forces as anyone else. In this provocative book, he argues that fashion, faith, and fantasy, while sometimes productive and even essential in physics, may be leading today's researchers astray in three of the field's most important areas—string theory, quantum mechanics, and cosmology.

2016. 520 pages. 186 line illus.
Cl: 978-0-691-11979-3 \$29.95 | £19.95

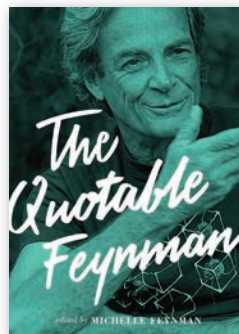


New
In Praise of Simple Physics
The Science and Mathematics behind Everyday Questions
Paul J. Nahin

"Nahin's writing style, as in previous books, is clear, conversational, humorous and chatty."

—Mark Hunacek, *MAA Reviews*

2016. 272 pages. 1 halftone. 59 line illus.
3 tables.
Cl: 978-0-691-16693-3 \$29.95 | £22.95



The Quotable Feynman
Edited by Michelle Feynman
With a foreword by Brian Cox and reflections on Richard Feynman by Yo-Yo Ma

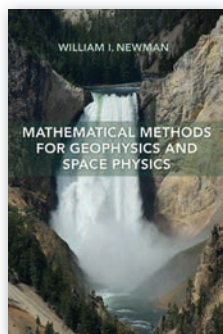
"Feynman's depth and zing leap from the page."

—*Nature*

"Open these pages and enjoy the company of one of nature's most marvelous minds."

—Alan Alda

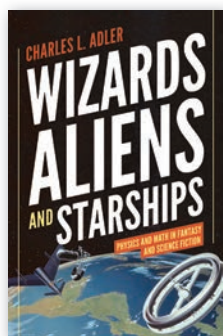
2015. 432 pages. 20 halftones.
Cl: 978-0-691-15303-2 \$24.95 | £18.95



New
**Mathematical Methods
 for Geophysics and
 Space Physics**
 William I. Newman

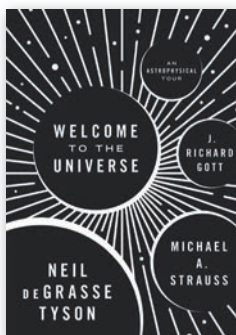
This authoritative and accessible book covers everything from the elements of vector and tensor analysis to ordinary differential equations, special functions, and chaos and fractals.

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**Wizards, Aliens, and
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 Physics and Math in Fantasy
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2014. 392 pages. 23 line illus. 9 tables.
 Cl: 978-0-691-14715-4 \$29.95 | £22.95
 Co-Winner of the 2015 AIP Science Writing
 Award for Books, American Institute of
 Physics
 One of Physics World's Top Ten Books of
 2014
 One of the Guardian's Best Popular
 Physical Science Books of 2014



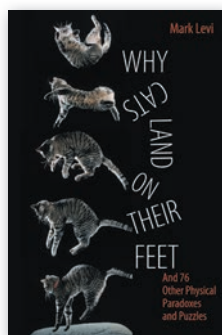
New
Welcome to the Universe
 An Astrophysical Tour
 Neil deGrasse Tyson,
 Michael A. Strauss &
 J. Richard Gott

"As citizens of the cosmos, we are duty bound to explore it. So opine astrophysicists Neil deGrasse Tyson, Michael Strauss, and Richard Gott, guides on this bracing expedition through dusty galactic hinterlands and the vast theoretical vistas of Albert Einstein's work."
 —*Nature*

Welcome to the Universe is a personal guided tour of the cosmos by three of today's leading astrophysicists. Inspired by the enormously popular introductory astronomy course that Neil deGrasse Tyson, Michael A. Strauss, and J. Richard Gott taught together at Princeton, this book covers it all—from planets, stars, and galaxies to black holes, wormholes, and time travel.

How do stars live and die? What are the prospects of intelligent life elsewhere in the universe? Why is it expanding and why is its expansion accelerating? Is our universe alone or part of an infinite multiverse? Answering these and many other questions, the authors open your eyes to the wonders of the cosmos, sharing their knowledge of how the universe works.

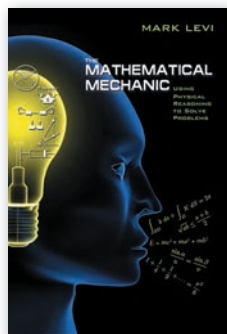
2016. 472 pages. 95 color illus.
 Cl: 978-0-691-15724-5 \$39.95 | £29.95



**Why Cats Land on
 Their Feet**
 And 76 Other Physical
 Paradoxes and Puzzles
 Mark Levi

"A collection of physical puzzlers, often with counter intuitive manifestations, which, for all that, admit rigorous explanation supported by physical intuition.... [H]ugely entertaining and provide hours of brainy activities."
 —Alexander Bogomolny, *CTK Insights*

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 Pa: 978-0-691-14854-0 \$19.95 | £14.95



**The Mathematical
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 Using Physical Reasoning to
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 Mark Levi

2012. 200 pages. 56 halftones. 66 line illus.
 1 table.
 Pa: 978-0-691-15456-5 \$15.95 | £11.95
 One of Choice's Outstanding Academic
 Titles for 2009
 One amazon.com's Top 10 Science Books
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Forthcoming

The Probability Lifesaver

All the Tools You Need to Understand Chance

Steven J. Miller

"This is a superb book by a gifted writer and mathematician."

—Larry Leemis, College of William & Mary

"This fun book gives readers the feeling that they are having a live conversation with the author. A wonderful resource for students and teachers alike."

—Iddo Ben-Ari, University of Connecticut

For students learning probability, its numerous applications, techniques, and methods can seem intimidating and overwhelming. That's where *The Probability Lifesaver* steps in. Designed to serve as a complete stand-alone introduction to the subject or as a supplement for a course, this accessible and user-friendly textbook helps students comfortably navigate probability's terrain and achieve positive results.

With a relaxed and informal style, Miller presents the math with thorough reviews of prerequisite materials, worked-out problems of varying difficulty, and proofs. Coverage of topics is comprehensive, and materials are repeated for reinforcement—both in the textbook and on the book's website.

Princeton Lifesaver Study Guides

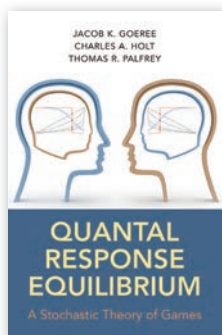
June 2017. 752 pages. 8 color illus.
64 line illus. 21 tables.

Pa: 978-0-691-14955-4 \$29.95 | £22.95
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Forthcoming

Ten Great Ideas about Chance

Persi Diaconis & Brian Skyrms



New

Quantal Response Equilibrium

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"This book brings together two decades of scholarship on an important model of boundedly rational behavior in strategic decision-making settings.... [W]ill be valuable to a wide range of scholars."

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An Introduction to Classical and Evolutionary Models

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"The approach to the subject is so original ... that I felt like becoming a student and learning everything all over again."

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March 2017. 424 pages. 16 color illus.
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Cl: 978-0-691-16703-9 \$95.00 | £70.95

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Continuous-Time Models in Corporate Finance

A User's Guide

Santiago Moreno-Bromberg & Jean-Charles Rochet

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Cl: 978-0-691-17652-9 \$45.00 | £34.95

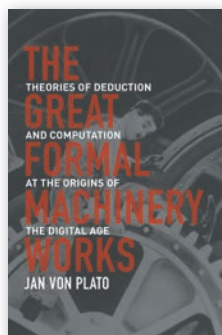


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Optimal Transport Methods in Economics

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Forthcoming

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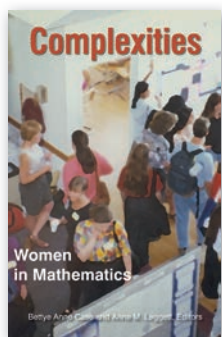
Theories of Deduction and Computation at the Origins of the Digital Age

Jan von Plato

"[A] lively and provocative history of mathematical logic, centered on the game-changing discoveries of Gödel, Turing, and Gentzen. Every mathematician interested in foundations will enjoy this book."

—John Stillwell, author of *Elements of Mathematics*

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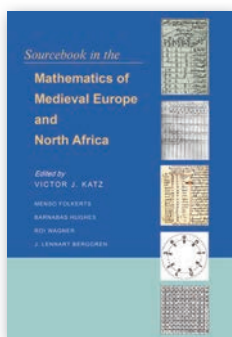
Women in Mathematics

Edited by Bettye Anne Case and Anne M. Leggett

2016. 456 pages. 15 line illus. 39 halftones. 7 tables.

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Winner of the 2006 Book Award in Mathematics/Computer Science, Alpha Sigma Nu and the Association of Jesuit Colleges and Universities



New

Sourcebook in the Mathematics of Medieval Europe and North Africa

Edited by Victor J. Katz, Menso Folkerts, Barnabas Hughes, Roi Wagner & J. Lennart Berggren

"This carefully crafted anthology consists primarily of excerpts from diverse historical sources in premodern mathematics. It will be a revelation to readers and abundantly testifies not only to the richness and depth of medieval Western mathematical sciences, but also to the complex interconnections of the different textual traditions that maintained them."

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"A significant contribution to the field."

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Forthcoming

Philosophy of Mathematics

Øystein Linnebo

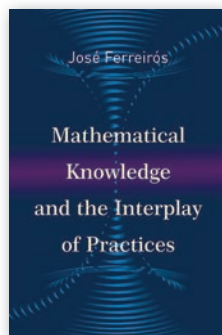
"This is an excellent introduction to the philosophy of mathematics, with clear and careful coverage of both traditional topics and cutting-edge contemporary debates."

—Roy T. Cook, University of Minnesota

An essential introduction for all students and teachers of philosophy, as well as mathematicians and others who want to understand the foundations of mathematics.

Princeton Foundations of Contemporary Philosophy
Scott Soames, Series Editor

June 2017. 208 pages.
Cl: 978-0-691-16140-2 \$29.95 | £22.95

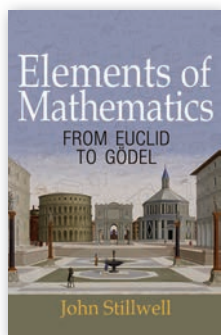


Mathematical Knowledge and the Interplay of Practices

José Ferreirós

This book presents a new approach to the epistemology of mathematics by viewing mathematics as a human activity whose knowledge is intimately linked with practice.

2015. 360 pages. 6 line illus.
Cl: 978-0-691-16751-0 \$45.00 | £34.95



New

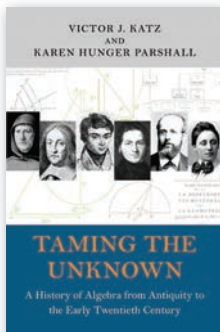
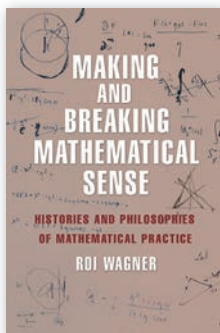
Elements of Mathematics
From Euclid to Gödel
John Stillwell

“John Stillwell uses his broad and impressive command of mathematics to transport a reader through each topic and to a higher level of understanding and questioning.... Stillwell’s writing is clear and direct, embellished by illustrative antidotes and examples.”

—Frank Swetz, *Convergence*

Elements of Mathematics takes readers on a fascinating tour that begins in elementary mathematics—but, as John Stillwell shows, this subject is not as elementary or straightforward as one might think. Not all topics that are part of today’s elementary mathematics were always considered as such, and great mathematical advances and discoveries had to occur in order for certain subjects to become “elementary.” Stillwell examines elementary mathematics from a distinctive twenty-first-century viewpoint and describes not only the beauty and scope of the discipline, but also its limits. *Elements of Mathematics* gives readers the highlights of elementary mathematics and glimpses of the parts of math beyond its boundaries.

2016. 440 pages. 8 halftones. 119 line illus.
Cl: 978-0-691-17168-5 \$39.95 | £29.95



Forthcoming

Making and Breaking Mathematical Sense
Histories and Philosophies of Mathematical Practice
Roi Wagner

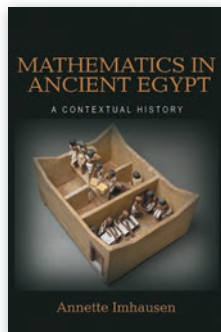
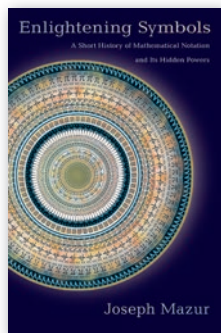
“Most contemporary analytic theories give pat characterizations of the nature of mathematics. But Wagner argues that the complexity and richness of the subject resist such formulas.... [T]his is a fresh, interesting, and thought-provoking book.”

—Jeremy Avigad, Carnegie Mellon University

January 2017. 252 pages. 3 halftones.
14 line illus.
Cl: 978-0-691-17171-5 \$45.00 | £34.95

Taming the Unknown
A History of Algebra from Antiquity to the Early Twentieth Century
Victor J. Katz & Karen Hunger Parshall

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A Short History of Mathematical Notation and Its Hidden Powers
Joseph Mazur

“A nuanced, intelligently framed chronicle packed with nuggets.... In a word: enlightening.”

—George Szpiro, *Nature*

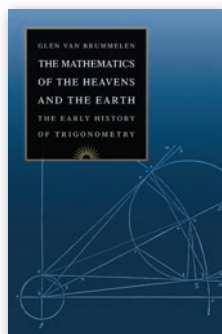
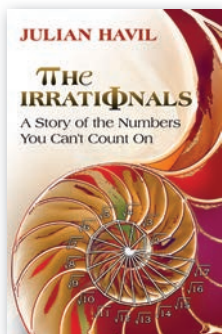
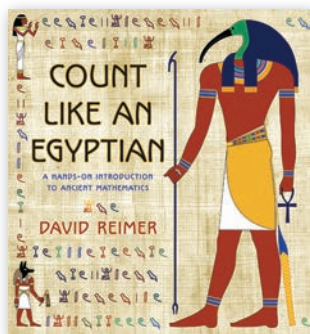
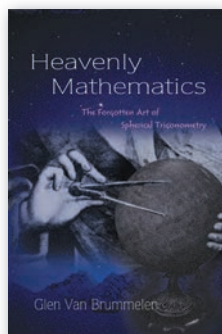
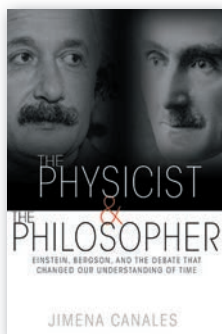
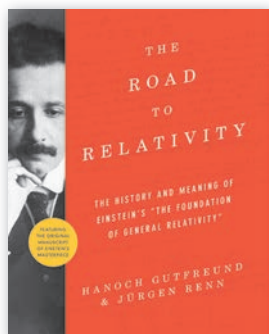
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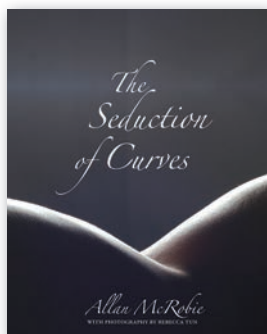
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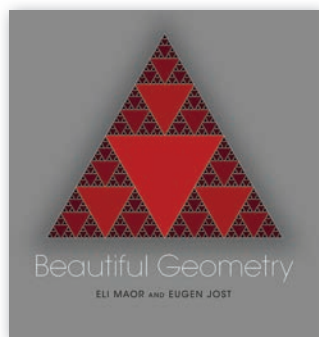
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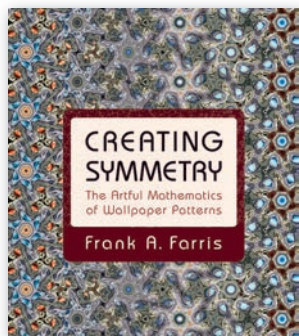
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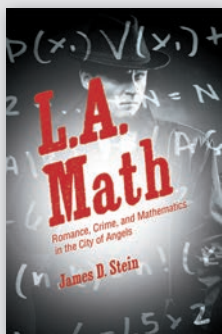
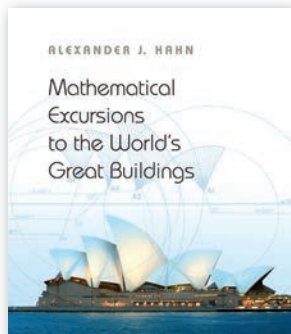
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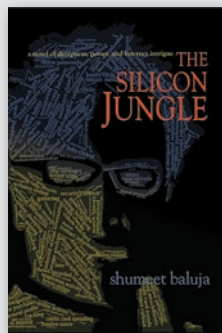
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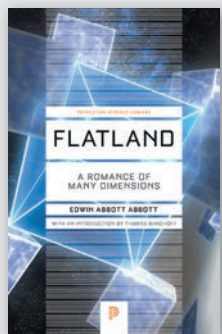
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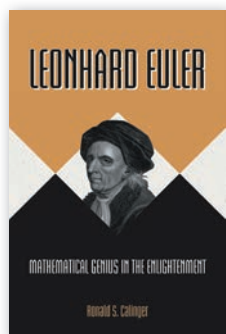
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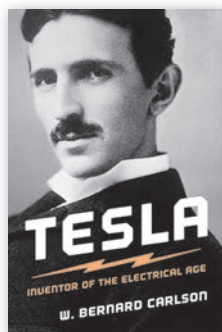
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