Mathematics From The Birth Of Numbers Jan Gullberg

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A Curious History of Mathematics - Joel Levy 2016-03 Mathematics opens new doors to the amazing world of maths. Telling the exciting story from a historical perspective, it shows how mathematical science advanced through the discoveries of the ancient Babylonians, Egyptians and Greeks, the great scholars of medieval Islam and Europe, and the Renaissance and the birth of the Scientific Revolution. From the simplest concepts of numbers and arithmetic, geometry and algebra, trigonometry and calculus, right through to infinity and chaos theory, Mathematics introduces and explains the most important concepts in accessible, non-technical language.

Analysis I - Terence Tao 2016-08-29 This is part one of a two-volume book on real analysis and is intended for senior undergraduate students of mathematics who have already been exposed to calculus. The emphasis is on rigour and foundations of analysis. Beginning with the construction of the number systems and set theory, the book discusses the basics of analysis (limits, series, continuity, differentiation, Riemann integration), through to power series, several variable calculus and Fourier analysis, and then finally the Lebesgue integral. These are almost entirely set in the concrete setting of the real line and Euclidean spaces, although there is some material on abstract metric and topological spaces. The book also has appendices on

mathematical logic and the decimal system. The entire text (omitting some less central topics) can be taught in two quarters of 25–30 lectures each. The course material is deeply intertwined with the exercises, as it is intended that the student actively learn the material (and practice thinking and writing rigorously) by proving several of the key results in the theory.

The Foundations of Mathematics - Kenneth Kunen 2009 Mathematical logic grew out of philosophical questions regarding the foundations of mathematics, but logic has now outgrown its philosophical roots, and has become an integral part of mathematics in general. This book is designed for students who plan to specialize in logic, as well as for those who are interested in the applications of logic to other areas of mathematics. Used as a text, it could form the basis of a beginning graduate-level course. There are three main chapters: Set Theory, Model Theory, and Recursion Theory. The Set Theory chapter describes the set-theoretic foundations of all of mathematics, based on the ZFC axioms. It also covers technical results about the Axiom of Choice, well-orderings, and the theory of uncountable cardinals. The Model Theory chapter discusses predicate logic and formal proofs, and covers the Completeness, Compactness, and Lowenheim-Skolem Theorems, elementary submodels, model completeness, and applications to algebra.

This chapter also continues the foundational issues begun in the set theory chapter. Mathematics can now be viewed as formal proofs from ZFC. Also, model theory leads to models of set theory. This includes a discussion of absoluteness, and an analysis of models such as H( ) and R( ). The Recursion Theory chapter develops some basic facts about computable functions, and uses them to prove a number of results of foundational importance; in particular, Church's theorem on the undecidability of logical consequence, the incompleteness theorems of Godel, and Tarski's theorem on the non-definability of truth.

Math Without Numbers - Milo Beckman 2022-01-11
An illustrated tour of the structures and patterns we call "math" The only numbers in this book are the page numbers. Math Without Numbers is a vivid, conversational, and wholly original guide to the three main branches of abstract math—topology, analysis, and algebra—which turn out to be surprisingly easy to grasp. This book upends the conventional approach to math, inviting you to think creatively about shape and dimension, the infinite and infinitesimal, symmetries, proofs, and how these concepts all fit together. What awaits readers is a freewheeling tour of the inimitable joys and unsolved mysteries of this curiously powerful subject. Like the classic math allegory Flatland, first published over a century ago, or Douglas Hofstadter's Godel, Escher, Bach forty years ago, there has never been a math book quite like Math Without Numbers. So many popularizations of math have dwelt on numbers like pi or zero or infinity. This book goes well beyond to questions such as: How many shapes are there? Is anything bigger than infinity? And is math even true? Milo Beckman shows why math is mostly just pattern recognition and how it keeps on surprising us with unexpected, useful connections to the real world. The ambitions of this book take a special kind of author. An inventive, original thinker pursuing his calling with jubilant passion. A prodigy. Milo Beckman completed the graduate-level course sequence in mathematics at age sixteen, when he was a sophomore at Harvard; while writing this book, he was studying the philosophical foundations of physics at Columbia under Brian Greene, among others.

Numbers and Infinity - E. H. Sondheimer 2006-01-01
This fresh overview of numbers and infinity avoids tedium and controversy while maintaining historical accuracy and modern relevance. Perfect for undergraduate mathematics or science history courses. 1981 edition.

A Source Book in Mathematics, 1200-1800 - Dirk Jan Struik 2014-07-14
These selected mathematical writings cover the years when the foundations were laid for the theory of numbers, analytic geometry, and the calculus. Originally published in 1986. The Princeton Legacy Library uses the latest print-on-demand technology to again make available previously out-of-print books from the distinguished backlist of Princeton University Press. These editions preserve the original texts of these important books while presenting them in durable paperback and hardcover editions. The goal of the Princeton Legacy Library is to vastly increase access to the rich scholarly heritage found in the thousands of books published by Princeton University Press since its founding in 1905.

Is God a Mathematician? - Mario Livio 2011-02-22
Bestselling author and astrophysicist Mario Livio examines the lives and theories of history's greatest mathematicians to ask how—if mathematics is an abstract construction of the human mind—it can so perfectly explain the physical world. Nobel Laureate Eugene Wigner once wondered about "the unreasonable effectiveness of mathematics" in the formulation of the laws of nature. Is God a Mathematician? investigates why mathematics is as powerful as it is. From ancient times to the present, scientists and philosophers have marveled at how such a seemingly abstract discipline could so perfectly explain the natural world. More than that—mathematics has often made predictions, for example, about subatomic particles or cosmic phenomena that were unknown at the time, but later were proven to be true. Is mathematics ultimately invented or discovered? If, as Einstein insisted, mathematics is "a product of human thought that is independent of experience," how can it so accurately describe and even predict the world around us? Physicist and author Mario Livio brilliantly explores mathematical ideas from Pythagoras to the present day as he shows us how intriguing questions

and ingenious answers have led to ever deeper insights into our world. This fascinating book will interest anyone curious about the human mind, the scientific world, and the relationship between them.

17 Lectures on Fermat Numbers - Michal Krizek 2013-03-14
The pioneering work of Pierre de Fermat has attracted the attention of mathematicians for over 350 years. This book provides an overview of the many properties of Fermat numbers and demonstrates their applications in areas such as number theory, probability theory, geometry, and signal processing. It is an ideal introduction to the basic mathematical ideas and algebraic methods connected with the Fermat numbers.

The Math of Life and Death - Kit Yates 2021-04-27
"Few of us really appreciate the full power of math--the extent to which its influence is not only in every office and every home, but also in every courtroom and hospital ward. In this ... book, Kit Yates explores the true stories of life-changing events in which the application--or misapplication--of mathematics has played a critical role: patients crippled by faulty genes and entrepreneurs bankrupted by faulty algorithms; innocent victims of miscarriages of justice; and the unwitting victims of software glitches"--Publisher marketing.

The World of Mathematics - James R. Newman 2000

Linear Algebra as an Introduction to Abstract Mathematics - Isaiah Lankham 2015-11-30
This is an introductory textbook designed for undergraduate mathematics majors with an emphasis on abstraction and in particular, the concept of proofs in the setting of linear algebra. Typically such a student would have taken calculus, though the only prerequisite is suitable mathematical grounding. The purpose of this book is to bridge the gap between the more conceptual and computational oriented undergraduate classes to the more abstract oriented classes. The book begins with systems of linear equations and complex numbers, then relates these to the abstract notion of linear maps on finite-dimensional vector spaces, and covers diagonalization, eigenspaces, determinants, and the Spectral Theorem. Each chapter concludes with both proof-writing and computational exercises.

The Real Number System - John M. H. Olmsted 2018-09-12
Concise but thorough and systematic, this categorical discussion presents a series of step-by-step axioms. The highly accessible text includes numerous examples and more than 300 exercises, all with answers. 1962 edition.

Understanding Numbers in Elementary School Mathematics - Hung-Hsi Wu 2011
This is a textbook for pre-service elementary school teachers and for current teachers who are taking professional development courses. By emphasizing the precision of mathematics, the exposition achieves a logical and coherent account of school mathematics at the appropriate level for the readership. Wu provides a comprehensive treatment of all the standard topics about numbers in the school mathematics curriculum: whole numbers, fractions, and rational numbers. Assuming no previous knowledge of mathematics, the presentation develops the basic facts about numbers from the beginning and thoroughly covers the subject matter for grades K through 7. Every single assertion is established in the context of elementary school mathematics in a manner that is completely consistent with the basic requirements of mathematics. While it is a textbook for pre-service elementary teachers, it is also a reference book that school teachers can refer to for explanations of well-known but hitherto unexplained facts. For example, the sometimes-puzzling concepts of percent, ratio, and rate are each given a treatment that is down to earth and devoid of mysticism. The fact that a negative times a negative is a positive is explained in a leisurely and comprehensible fashion.

Excursions in Number Theory - Charles Stanley Ogilvy 1988-01-01
Challenging, accessible mathematical adventures involving prime numbers, number patterns, irrationals and iterations, calculating prodigies, and more. No special training is needed, just high school mathematics and an inquisitive mind. "A splendidly written, well selected and presented collection. I recommend the book unreservedly to all

readers." — Martin Gardner.

Math with Bad Drawings - Ben Orlin 2018-09-18
A hilarious reeducation in mathematics-full of joy, jokes, and stick figures-that sheds light on the countless practical and wonderful ways that math structures and shapes our world. In Math With Bad Drawings, Ben Orlin reveals to us what math actually is; its myriad uses, its strange symbols, and the wild leaps of logic and faith that define the usually impenetrable work of the mathematician. Truth and knowledge come in multiple forms: colorful drawings, encouraging jokes, and the stories and insights of an empathetic teacher who believes that math should belong to everyone. Orlin shows us how to think like a mathematician by teaching us a brand-new game of tic-tac-toe, how to understand an economic crises by rolling a pair of dice, and the mathematical headache that ensues when attempting to build a spherical Death Star. Every discussion in the book is illustrated with Orlin's trademark "bad drawings," which convey his message and insights with perfect pitch and clarity. With 24 chapters covering topics from the electoral college to human genetics to the reasons not to trust statistics, Math with Bad Drawings is a life-changing book for the math-estranged and math-enamored alike.

99 Variations on a Proof - Philip Ording 2019-02-05
An exploration of mathematical style through 99 different proofs of the same theorem This book offers a multifaceted perspective on mathematics by demonstrating 99 different proofs of the same theorem. Each chapter solves an otherwise unremarkable equation in distinct historical, formal, and imaginative styles that range from Medieval, Topological, and Doggerel to Chromatic, Electrostatic, and Psychedelic. With a rare blend of humor and scholarly aplomb, Philip Ording weaves these variations into an accessible and wide-ranging narrative on the nature and practice of mathematics. Inspired by the experiments of the Paris-based writing group known as the Oulipo—whose members included Raymond Queneau, Italo Calvino, and Marcel Duchamp—Ording explores new ways to examine the aesthetic possibilities of mathematical activity. 99 Variations on a Proof is a mathematical take on Queneau's

Exercises in Style, a collection of 99 retellings of the same story, and it draws unexpected connections to everything from mysticism and technology to architecture and sign language. Through diagrams, found material, and other imagery, Ording illustrates the flexibility and creative potential of mathematics despite its reputation for precision and rigor. Readers will gain not only a bird's-eye view of the discipline and its major branches but also new insights into its historical, philosophical, and cultural nuances. Readers, no matter their level of expertise, will discover in these proofs and accompanying commentary surprising new aspects of the mathematical landscape.

The 1-2-3 of Modular Forms - Jan Hendrik Bruinier 2008-02-10
This book grew out of three series of lectures given at the summer school on "Modular Forms and their Applications" at the Sophus Lie Conference Center in Nordfjordeid in June 2004. The first series treats the classical one-variable theory of elliptic modular forms. The second series presents the theory of Hilbert modular forms in two variables and Hilbert modular surfaces. The third series gives an introduction to Siegel modular forms and discusses a conjecture by Harder. It also contains Harder's original manuscript with the conjecture. Each part treats a number of beautiful applications.

The New York Times Book of Mathematics - Gina Bari Kolata 2013
Presents a selection from the archives of the New York newspaper of its writings on mathematics from 1892 to 2010, covering such topics as chaos theory, statistics, cryptography, and computers.

Mathematics From the Birth of Numbers - Jan Gullberg 1997-01-07
Traces the history of mathematics and numeration, and reviews symbolic logic, set theory, series, equations, functions, geometry, trigonometry, vector analysis, fractals, matrices, calculus, probability theory, and differential equations

Strength in Numbers - Sherman K. Stein 1999-01-01
An engaging survey of the fundamental concepts of mathematics and the many ways math is used in everyday life. This is a stimulating and simple reintroduction to all the math we all learned in high school but have forgotten, using many examples of how math applies to the real world.

Highlights the math topics that are most relevant to everyday concerns, such as how statistics can be misleading and how interest on savings accounts accrues at different interest rates. Also explores the most fundamental mysteries and amazing properties, such as why two negative numbers multiplied together make a positive number and why fractions can be easily multiplied but not easily added. Uses a multitude of examples from real life such as how extremely large numbers are used to write unbreakable computer codes and how the slope of a curve is used by biologists to calculate the rate of growth of species. It walks the reader step by step through simple solutions to each problem explored.

The Math Book - Clifford A. Pickover 2009
This book covers 250 milestones in mathematical history, beginning millions of years ago with ancient "ant odometers" and moving through time to our modern-day quest for new dimensions.

Mathematics for Human Flourishing - Francis Su 2020-01-07
"The ancient Greeks argued that the best life was filled with beauty, truth, justice, play and love. The mathematician Francis Su knows just where to find them."--Kevin Hartnett, Quanta Magazine" This is perhaps the most important mathematics book of our time. Francis Su shows mathematics is an experience of the mind and, most important, of the heart."--James Tanton, Global Math Project For mathematician Francis Su, a society without mathematical affection is like a city without concerts, parks, or museums. To miss out on mathematics is to live without experiencing some of humanity's most beautiful ideas. In this profound book, written for a wide audience but especially for those disenchanted by their past experiences, an award-winning mathematician and educator weaves parables, puzzles, and personal reflections to show how mathematics meets basic human desires--such as for play, beauty, freedom, justice, and love--and cultivates virtues essential for human flourishing. These desires and virtues, and the stories told here, reveal how mathematics is intimately tied to being human. Some lessons emerge from those who have struggled, including philosopher Simone Weil, whose own mathematical contributions were overshadowed by her brother's, and Christopher Jackson, who discovered mathematics as an inmate in a federal prison. Christopher's letters to the author appear throughout the book and show how this intellectual pursuit can--and must--be open to all.

Probability - Rick Durrett 2010-08-30
This classic introduction to probability theory for beginning graduate students covers laws of large numbers, central limit theorems, random walks, martingales, Markov chains, ergodic theorems, and Brownian motion. It is a comprehensive treatment concentrating on the results that are the most useful for applications. Its philosophy is that the best way to learn probability is to see it in action, so there are 200 examples and 450 problems. The fourth edition begins with a short chapter on measure theory to orient readers new to the subject.

The Mathematics Bible - Colin Beveridge 2016-09-01
Mathematics has a history filled with brilliant minds and world-changing discoveries. It just needs to be made accessible. And that's exactly what "The Mathematics Bible" does. It describes the history and development of mathematics in easily understood language. It introduces the most important players, societies and cultures, like the Ancient Egyptians and Pythagoreans, and key figures such as Galileo, Dodgson, Babbage and Lovelace. It brings the ancient science and art of mathematics into the contemporary world of the 21st century. Accessible, well-informed and fully illustrated, this is a book that shows perfectly just how varied and fascinating mathematics can be. These definitive guides to their subjects together have sold over three million copies worldwide. Their success is undoubtedly owed to the comprehensiveness and quality of content, for an excellent price, and the smaller size is nonetheless filled with 400 illustrations.

Numbers and Geometry - John Stillwell 2012-12-06
A beautiful and relatively elementary account of a part of mathematics where three main fields - algebra, analysis and geometry - meet. The book provides a broad view of these subjects at the level of calculus, without being a calculus book. Its roots are in arithmetic and geometry, the two opposite poles of mathematics, and the source of historic conceptual conflict. The resolution of this conflict, and its role in the

development of mathematics, is one of the main stories in the book. Stillwell has chosen an array of exciting and worthwhile topics and elegantly combines mathematical history with mathematics. He covers the main ideas of Euclid, but with 2000 years of extra insights attached. Presupposing only high school algebra, it can be read by any well prepared student entering university. Moreover, this book will be popular with graduate students and researchers in mathematics due to its attractive and unusual treatment of fundamental topics. A set of well-written exercises at the end of each section allows new ideas to be instantly tested and reinforced.

What's the Point of Math? - DK 2020-01-28
Math makes the world go around. An educational book that will give you surprising answers to everyday math challenges. This ebook unpacks how math is an essential part of our everyday life in ways that you never thought of. Full of crazy facts, magic tricks, and mathematical brainteasers and beautiful illustrations show you that math is interesting, fun, and not intimidating at all! Ever wondered where math originated from? This fantastic educational ebook unpacks all the curious questions that your child has about math including intriguing historical stories that explore the often-surprising origins of math that we use in our daily lives. Learn about how the formation of number sequences began, to the origins of trigonometry, and find out how to become a trillionaire! Math in our daily lives is used in many things that might not even seem that obvious. Math Controls Just About Everything Inspire your children with numbers and help bring mathematical explanations to life with this engaging educational book. Expand their knowledge in the complexity of understanding math by using simple illustrative examples. To make these topics more exciting and impactful, the ebook is full of great puzzles, awesome games, and interesting facts that will break barriers in their understanding. "Try it out" examples give mathematical explanations that are simple and easy to grasp. What's The Point Of Math? will not only change your child's perception of numbers but give them the skills and understanding to apply the principles in their everyday life! This educational ebook explains the point of: - Numbers and counting -

Shapes and measuring - Patterns and sequences - Probability and logic - Data and statistics

Mathematics for the General Reader - E.C. Titchmarsh 2017-04-19
"A first-class mathematician's lucid, unhurried account of the science of numbers from arithmetic through the calculus." — James R. Newman, The World of Mathematics. This highly accessible introduction to mathematics is geared toward readers seeking a firm grasp of the essentials of mathematical theory and practice. The treatment also offers a concise outline of mathematical history and a clearer notion of why mathematicians do what they do. Author E. C. Titchmarsh, who served for many years as Savilian Professor of Geometry at Oxford University, begins with counting and the fundamentals of arithmetic. He guides readers through the complexities of algebra, fractions, geometry, irrational numbers, logarithms, infinite series, complex numbers, quadratic equations, trigonometry, functions, and integral and differential calculus. Titchmarsh's graceful, fluid style helps make complicated topics easier to grasp, and his inclusion of numerous examples will prove especially helpful to readers with little or no background in mathematics.

Living Proof - Allison K. Henrich 2019
Wow! This is a powerful book that addresses a long-standing elephant in the mathematics room. Many people learning math ask ``Why is math so hard for me while everyone else understands it?'' and ``Am I good enough to succeed in math?'' In answering these questions the book shares personal stories from many now-accomplished mathematicians affirming that ``You are not alone; math is hard for everyone'' and ``Yes; you are good enough.'' Along the way the book addresses other issues such as biases and prejudices that mathematicians encounter, and it provides inspiration and emotional support for mathematicians ranging from the experienced professor to the struggling mathematics student. -- Michael Dorff, MAA President This book is a remarkable collection of personal reflections on what it means to be, and to become, a mathematician. Each story reveals a unique and refreshing understanding of the barriers erected by our cultural focus on ``math is

hard.'' Indeed, mathematics is hard, and so are many other things--as Stephen Kennedy points out in his cogent introduction. This collection of essays offers inspiration to students of mathematics and to mathematicians at every career stage. --Jill Pipher, AMS President This book is published in cooperation with the Mathematical Association of America.

Elements of Logic via Numbers and Sets - D.L. Johnson 2012-12-06 In mathematics we are interested in why a particular formula is true. Intuition and statistical evidence are insufficient, so we need to construct a formal logical proof. The purpose of this book is to describe why such proofs are important, what they are made of, how to recognize valid ones, how to distinguish different kinds, and how to construct them. This book is written for 1st year students with no previous experience of formulating proofs. Dave Johnson has drawn from his considerable experience to provide a text that concentrates on the most important elements of the subject using clear, simple explanations that require no background knowledge of logic. It gives many useful examples and problems, many with fully-worked solutions at the end of the book. In addition to a comprehensive index, there is also a useful `Dramatis Personae` an index to the many symbols introduced in the text, most of which will be new to students and which will be used throughout their degree programme.

The Boy Who Loved Math - Deborah Heiligman 2013-06-25 Most people think of mathematicians as solitary, working away in isolation. And, it's true, many of them do. But Paul Erdos never followed the usual path. At the age of four, he could ask you when you were born and then calculate the number of seconds you had been alive in his head. But he didn't learn to butter his own bread until he turned twenty. Instead, he traveled around the world, from one mathematician to the next, collaborating on an astonishing number of publications. With a simple, lyrical text and richly layered illustrations, this is a beautiful introduction to the world of math and a fascinating look at the unique character traits that made "Uncle Paul" a great man. The Boy Who Loved Math by Deborah Heiligman is a Kirkus Reviews Best Book of 2013 and a New York Times Book Review Notable Children's Book of 2013.

Mathematics for Everyman - Egmont Colerus 2013-02-04 This witty and engaging stylebook presents the fundamentals of mathematical operations: number systems, first steps in algebra and algebraic notation, common fractions and equations, and much more. 1958 edition.

An Adventurer's Guide to Number Theory - Richard Friedberg 2012-07-06 This witty introduction to number theory deals with the properties of numbers and numbers as abstract concepts. Topics include primes, divisibility, quadratic forms, and related theorems.

Learning and Teaching Mathematics 0-8 - Helen Taylor 2013-11-14 'What a super book! It is absolutely packed with practical ideas and activities to help you love maths, and love teaching and/or learning it. It certainly helps to develop an enthusiasm for a subject most adults tend to say "I'm no good at..."' - Early Years Educator 'A wonderful book, packed with practical ideas and activities to help all students love maths.' - Jo Boaler, Professor of Mathematics Education, Stanford University Fostering an enthusiasm for mathematics in young children is a vital part of supporting their mathematical development. Underpinned by subject and pedagogical knowledge, case studies and research-based perspectives, the authors provide clear guidance on how to support young children's learning and understanding in an effective and engaging way. Contemporary approaches to developing essential mathematical learning for young children are explored, including: play, practical activities and talk for mathematics outdoor learning understanding pattern counting, calculation and place value measures and shape problem solving and representing mathematics assessment working with parents. Written for both trainees and practitioners working with children aged 0 to 8 years, including those studying for Early Years and Early Childhood degrees and those on Primary PGCE and Primary Education courses, this book offers mathematical subject knowledge and teaching ideas in one volume. Helen Taylor is Course Leader of PGCE Primary Part-time Mathematics at Canterbury Christ

Church University. Andrew Harris is Course Leader of PGCE Modular Mathematics at Canterbury Christ Church University.

Weapons of Math Destruction - Cathy O'Neil 2017-09-05
NEW YORK TIMES BESTSELLER • A former Wall Street quant sounds the alarm on Big Data and the mathematical models that threaten to rip apart our social fabric—with a new afterword "A manual for the twenty-first-century citizen . . . relevant and urgent."—Financial Times NATIONAL BOOK AWARD LONGLIST • NAMED ONE OF THE BEST BOOKS OF THE YEAR BY The New York Times Book Review • The Boston Globe • Wired • Fortune • Kirkus Reviews • The Guardian • Nature • On Point We live in the age of the algorithm. Increasingly, the decisions that affect our lives—where we go to school, whether we can get a job or a loan, how much we pay for health insurance—are being made not by humans, but by machines. In theory, this should lead to greater fairness: Everyone is judged according to the same rules. But as mathematician and data scientist Cathy O'Neil reveals, the mathematical models being used today are unregulated and uncontestable, even when they're wrong. Most troubling, they reinforce discrimination—propping up the lucky, punishing the downtrodden, and undermining our democracy in the process. Welcome to the dark side of Big Data.

An Introduction to Abstract Mathematics - Robert J. Bond 2007-08-24
Bond and Keane explicate the elements of logical, mathematical argument to elucidate the meaning and importance of mathematical rigor. With definitions of concepts at their disposal, students learn the rules of logical inference, read and understand proofs of theorems, and write their own proofs all while becoming familiar with the grammar of mathematics and its style. In addition, they will develop an appreciation of the different methods of proof (contradiction, induction), the value of a proof, and the beauty of an elegant argument. The authors emphasize that mathematics is an ongoing, vibrant disciplineits long, fascinating history continually intersects with territory still uncharted and questions still in need of answers. The authors extensive background in teaching mathematics shines through in this balanced, explicit, and engaging text,

designed as a primer for higher- level mathematics courses. They elegantly demonstrate process and application and recognize the byproducts of both the achievements and the missteps of past thinkers. Chapters 1-5 introduce the fundamentals of abstract mathematics and chapters 6-8 apply the ideas and techniques, placing the earlier material in a real context. Readers interest is continually piqued by the use of clear explanations, practical examples, discussion and discovery exercises, and historical comments.

Our Mathematical Universe - Max Tegmark 2015-02-03
Max Tegmark leads us on an astonishing journey through past, present and future, and through the physics, astronomy and mathematics that are the foundation of his work, most particularly his hypothesis that our physical reality is a mathematical structure and his theory of the ultimate multiverse. In a dazzling combination of both popular and groundbreaking science, he not only helps us grasp his often mind-boggling theories, but he also shares with us some of the often surprising triumphs and disappointments that have shaped his life as a scientist. Fascinating from first to last—this is a book that has already prompted the attention and admiration of some of the most prominent scientists and mathematicians.

A Mathematical Introduction to Logic - Herbert Enderton 2001-01-23
A Mathematical Introduction to Logic, Second Edition, offers increased flexibility with topic coverage, allowing for choice in how to utilize the textbook in a course. The author has made this edition more accessible to better meet the needs of today's undergraduate mathematics and philosophy students. It is intended for the reader who has not studied logic previously, but who has some experience in mathematical reasoning. Material is presented on computer science issues such as computational complexity and database queries, with additional coverage of introductory material such as sets. * Increased flexibility of the text, allowing instructors more choice in how they use the textbook in courses. * Reduced mathematical rigour to fit the needs of undergraduate students

Algebraic Topology - Allen Hatcher 2002

An introductory textbook suitable for use in a course or for self-study, featuring broad coverage of the subject and a readable exposition, with many examples and exercises.

Vision in Elementary Mathematics - W. W. Sawyer 2012-09-26
Sure-fire techniques of visualizing, dramatizing, and analyzing numbers promise to attract and retain students' attention and understanding. Topics include basic multiplication and division, algebra, word problems, graphs, negative numbers, fractions, many other practical applications of elementary mathematics. 1964 ed. Answers to Problems.

Reverse Mathematics - John Stillwell 2019-09-24
This volume presents reverse mathematics to a general mathematical audience for the first time. Stillwell gives a representative view of this field, emphasizing basic analysis--finding the "right axioms" to prove fundamental theorems--and giving a novel approach to logic. to logic.