All The Mathematics You Missed But Need To Know For Graduate School

Topology Through Inquiry is a comprehensive introduction to point-set, algebraic, and geometric topology, designed to support inquiry-based learning (IBL) courses for upper-division undergraduate or beginning graduate students. The book presents an enormous amount of topology, allowing an instructor to choose which topics to treat. The point-set material contains many interesting topics well beyond the basic core, including continua and metrizability. Geometric and algebraic topology topics include the classification of 2-manifolds, the fundamental group, covering spaces, and homology (simplicial and singular). A unique feature of the introduction to homology is to convey a clear geometric motivation by starting with mod 2 coefficients. The authors are acknowledged masters of IBL-style teaching. This book gives students joy-filled, manageable challenges that incrementally develop their knowledge and skills. The exposition includes insightful framing of fruitful points of view as well as advice on effective thinking and learning. The text presumes only a modest level of mathematical maturity to begin, but students who work their way through this text will grow from mathematics students into mathematicians. Michael Starbird is a University of Texas Distinguished Teaching Professor of Mathematics. Among his works are two other co-authored books in the Mathematical Association of America's (MAA) Textbook series. Francis Su is the Benediktsson-Karwa Professor of Mathematics at Harvey Mudd College and a past president of the MAA. Both authors are award-winning teachers, including each having received the MAA's Haimo Award for distinguished teaching. Starbird and Su are, jointly and individually, on lifelong missions to make learning—of mathematics and beyond—joyful, effective, and available to everyone. This book invites topology students and teachers to join in the adventure.

This radical approach to complex analysis replaces the standard calculational arguments with new geometric ones. Using several hundred diagrams this is a new visual approach to the topic.

Historic text by two great mathematicians consists of two parts, The Processes of Analysis and The Transcendental Functions. Geared toward students of analysis and historians of mathematics. 1920 third edition.

Fill in any gaps in your knowledge with this overview of key topics in undergraduate mathematics, now with four new chapters.

Foundations of Mathematics
(But Need to Know for Graduate School)
But Need to Know for Graduate School
Advanced Calculus
A Problem Solving Approach
Where Do Numbers Come From?

When you are a young mathematician, graduate school marks the first step toward a career in mathematics. During this period, you will make important decisions which will affect the rest of your career. Here now is a detailed guide to help you navigate graduate school and the years that follow. In his inimitable and forthright style, Steven Krantz addresses the major issues of graduate school, including choosing a program, passing the qualifying exams, finding an advisor, writing a thesis, and getting your first job. As with his earlier guide, How to Teach Mathematics, he avoids generalities, giving clear advice on how to handle real situations. The book also contains a description of the basic elements of a mathematical education, as well as a glossary and appendices on the structure of a typical department and university and the standard academic ranks. Steven G. Krantz is an accomplished mathematician and an award-winning author. He has published 130 research articles and 45 books. He has worked in many different types of mathematics departments, supervised both masters and doctoral students, and is currently the Chair of the Mathematics Department at Washington University in St. Louis.

Starting with an abstract treatment of vector spaces and linear transforms, this introduction presents a corresponding theory of integration and concludes with applications to analytic functions of complex variables. 1959 edition.

All the Mathematics You MissedBut Need to Know for Graduate School数学物理研究生必知的数All the Mathematics You MissedBut Need to Know for Graduate SchoolCambridge University Press

Foundations of Mathematics offers the university student or interested reader a unique reference book by covering the basics of algebra, trigonometry, geometry, and calculus. There are many instances in the book to demonstrate the interplay and interconnectedness of these topics. The book presents definitions and examples throughout for clear, easy learning. Numerous exercises are included at the ends of the chapters, and readers are encouraged to complete all of them as an essential part of working through the book. It offers a unique experience for readers to understand different areas of mathematics in one clear, concise text. Instructors' resources are available upon adoption. Features: •Covers the basics of algebra, trigonometry, geometry, and calculus •Includes all of the mathematics needed to learn calculus •Demonstrates the interplay and interconnectedness of these topics •Uses numerous examples and exercises to reinforce concepts

Topology Through Inquiry
Algebra, Geometry, Trigonometry and Calculus
All the Mathematics You Missed
Mathematics and Computation
Reverse Mathematics
Write Your Own Proofs

" This book presents reverse mathematics to a general mathematical audience for the first time. Reverse mathematics is a new field that answers some old questions. In the two thousand years that mathematicians have been deriving theorems from axioms, it has often been asked: which axioms are needed to prove a given theorem? Only in the last two hundred years have some of these questions been answered, and only in the last forty years has a systematic approach been developed. In Reverse Mathematics, John 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. Stillwell introduces reverse mathematics historically, describing the two developments that made reverse mathematics possible, both involving the idea of arithmetization. The first was the nineteenth-century project of arithmetizing analysis, which aimed to define all concepts of analysis in terms of natural numbers and sets of natural numbers. The second was the twentieth-century arithmetization of logic and computation. Thus arithmetic in some sense underlies analysis, logic, and computation. Reverse mathematics exploits this insight by viewing analysis as arithmetic extended by axioms about the existence of infinite sets. Remarkably, only a small number of axioms are needed for reverse mathematics, and, for each basic theorem of analysis, Stillwell finds the "right axiom" to prove it. By using a minimum of mathematical logic in a well-motivated way, Reverse Mathematics will engage advanced undergraduates and all mathematicians interested in the foundations of mathematics. "--

"One of the themes of the book is how to have a fulfilling professional life. In order to achieve this goal, Krantz discusses keeping a vigorous scholarly program going and finding new challenges, as well as dealing with the everyday tasks of research, teaching, and administration." "In short, this is a survival manual for the professional mathematician - both in academics and in industry and government agencies. It is a sequel to the author's A Mathematician's Survival Guide."--BOOK JACKET.

An essential resource for advanced undergraduate and beginning graduate students in quantitative subjects who need to quickly learn some serious mathematics.

"Witty, compelling, and just plain fun to read . . ." —Evelyn Lamb, Scientific American The Freakonomics of math—a math-world superstar unveils the hidden beauty and logic of the world and puts its power in our hands The math we learn in school can seem like a dull set of rules, laid down by the ancients and not to be questioned. In How Not to Be Wrong, Jordan Ellenberg shows us how terribly limiting this view is: Math isn't confined to abstract incidents that never occur in real life, but rather touches everything we do—the whole world is shot through with it. Math allows us to see the hidden structures underneath the messy and chaotic surface of our world. It's a science of not being wrong, hammered out by centuries of hard work and argument. Armed with the tools of mathematics, we can see through to the true meaning of information we take for granted: How early should you get to the airport? What does "public opinion" really represent? Why do tall parents have shorter children? Who really won Florida in 2000? And how likely are you, really, to develop cancer? How Not to Be Wrong presents the surprising revelations behind all of these questions and many more, using the mathematician's method of analyzing life and exposing the hard-won insights of the academic community to the layman—minus the jargon. Ellenberg chases mathematical threads through a vast range of time and space, from the everyday to the cosmic, encountering, among other things, baseball, Reaganomics, daring lottery schemes, Voltaire, the replicability crisis in psychology, Italian Renaissance painting, artificial languages, the development of non-Euclidean geometry, the coming obesity apocalypse, Antonin Scalia's views on crime and punishment, the psychology of slime molds, what Facebook can and can't figure out about you, and the existence of God. Ellenberg pulls from history as well as from the latest theoretical developments to provide those not trained in math with the knowledge they need. Math, as Ellenberg says, is "an atomic-powered prosthesis that you attach to your common sense, vastly multiplying its reach and strength." With the tools of mathematics in hand, you can understand the world in a deeper, more meaningful way. How Not to Be Wrong will show you how.

The Joy of Mathematics
Geometry
How Not to Be Wrong
Berkeley Problems in Mathematics
Graduate School and Early Career Development
Inequalities for Stochastic Processes

In this must-have for anyone who wants to better understand their love life, a mathematician pulls back the curtain and reveals the hidden patterns—from dating sites to divorce, sex to marriage—behind the rituals of love. The roller coaster of romance is hard to quantify; defining how lovers might feel from a set of simple equations is impossible. But that doesn't mean that mathematics isn't a crucial tool for understanding love. Love, like most things in life, is full of patterns. And mathematics is ultimately the study of patterns—from predicting the weather to the fluctuations of the stock market, the movement of planets or the growth of cities. These patterns twist and turn and warp and evolve just as the rituals of love do. In The Mathematics of Love, Dr. Hannah Fry takes the reader on a fascinating journey through the patterns that define our love lives, applying mathematical formulas to the most common yet complex questions pertaining to love: What's the chance of finding love? What's the probability that it will last? How do online dating algorithms work, exactly? Can game theory help us decide who to approach in a bar? At what point in your dating life should you settle down? From evaluating the best strategies for online dating to defining the nebulous concept of beauty, Dr. Fry proves—with great insight, wit, and fun—that math is a surprisingly useful tool to negotiate the complicated, often baffling, sometimes infuriating, always interesting, mysteries of love.

This little book makes serious math simple—with more than 120 laws, theorems, paradoxes, and more explained in jargon-free terms. The Little Book of Mathematical Principles provides simple, clear explanations for the principles, equations, paradoxes, laws, and theorems that form the basis of modern mathematics. It is a refreshingly engaging tour of Fibonacci numbers, Euclid's Elements, and Zeno's paradoxes, as well as other fundamental principles such as chaos theory, game theory, and the game of life. Renowned mathematics author Dr. Robert Solomon simplifies the ancient discipline of mathematics and provides fascinating answers to intriguing questions, such as: What is the greatest pyramid?, What is a perfect number?, and Is there a theory for stacking oranges?

Linear algebra is perhaps the most important branch of mathematics for computational sciences, including machine learning, AI, data science, statistics, simulations, computer graphics, multivariate analyses, matrix decompositions, signal processing, and so on.The way linear algebra is presented in traditional textbooks is different from how professionals use linear algebra in computers to solve real-world applications in machine learning, data science, statistics, and signal processing. For example, the "determinant" of a matrix is important for linear algebra theory, but should you actually use the determinant in practical applications? The answer may surprise you!If you are interested in learning the mathematical concepts linear algebra and matrix analysis, but also want to apply those concepts to data analyses on computers (e.g., statistics or signal processing), then this book is for you. You'll see all the math concepts implemented in MATLAB and in Python.Unique aspects of this book: - Clear and comprehensible explanations of concepts and theories in linear algebra. - Several distinct explanations of the same ideas, which is a proven technique for learning. - Visualization using graphs, which strengthens the geometric intuition of linear algebra. - Implementations in MATLAB and Python. Com'on, in the real world, you never solve math problems by hand! You need to know how to implement math in software! - Beginner to intermediate topics, including vectors, matrix multiplications, least-squares projections, eigendecomposition, and singular-value decomposition. - Strong focus on modern applications-oriented aspects of linear algebra and matrix analysis. - Intuitive visual explanations of diagonalization, eigenvalues and eigenvectors, and singular value decomposition. - Codes (MATLAB and Python) are provided to help you understand and apply linear algebra concepts on computers. - A combination of hand-solved exercises and more advanced code challenges. Math is not a spectator sport!

An introduction to computational complexity theory, its connections and interactions with mathematics, and its central role in the natural and social sciences, technology, and philosophy Mathematics and Computation provides a broad, conceptual overview of computational complexity theory—the mathematical study of efficient computation. With important practical applications to computer science and industry, computational complexity theory has evolved into a highly interdisciplinary field, with strong links to most mathematical areas and to a growing number of scientific endeavors. Avi Wigderson takes a sweeping survey of complexity theory, emphasizing the field's insights and challenges. He explains the ideas and motivations leading to key models, notions, and results. In particular, he looks at algorithms and complexity, computations and proofs, randomness and interaction, quantum and arithmetic computation, and cryptography and learning, all as parts of a cohesive whole with numerous cross-influences. Wigderson illustrates the immense breadth of the field, its beauty and richness, and its diverse and growing interactions with other areas of mathematics. He ends with a comprehensive look at the theory of computation, its methodology and aspirations, and the unique and fundamental ways in which it has shaped and will further shape science, technology, and society. For further reading, an extensive bibliography is provided for all topics covered. Mathematics and Computation is useful for undergraduate and graduate students in mathematics, computer science, and related fields, as well as researchers and teachers in these fields. Many parts require little background, and serve as an invitation to newcomers seeking an introduction to the theory of computation. Comprehensive coverage of computational complexity theory, and beyond High-level, intuitive exposition, which brings conceptual clarity to this central and dynamic scientific discipline Historical accounts of the evolution and motivations of central concepts and models A broad view of the theory of computation's influence on science, technology, and society Extensive bibliography

Patterns, Proofs, and the Search for the Ultimate Equation
Ideas and Strategies from Vibrant Classrooms
Proofs from the Inside Out
A Mathematician's Survival Guide
How to Teach Mathematics, Second Edition
Elements of Point Set Topology

Wouldn't it be great if all school teachers (from kindergarten through high school) would share the joy of mathematics with their students, rather than focus only on the prescribed curriculum that will subsequently be tested? aThis book promises to help teachers and all readers do just that by revealing some wonders of mathematics often missing from classrooms. Here's your chance to catch up with the math gems you may have missed in your school years. aaaa Using jargon-free language and many illustrations, the authors--all veteran math educators--explore five areas--arithmetic, algebra, geometry, probability, and the ways in which mathematics can reinforce common sense. Among other things, you'll learn "the rule of 72," which enables you to quickly determine how long it will take your bank account to double its value at a specific interest rate. Other handy techniques include an automatic algorithm for multiplying numbers mentally and a clever application that will allow you to convert from miles to kilometers (or the reverse) mentally. A delightful presentation of geometric novelties reveals relationships that could have made your study of geometry more fun and enlightening. In the area of probability there is a host of interesting examples- from the famous Monty-Hall problem to the counterintuitive probability of two people having the same birthday in a crowded room. aaaa Finally, the authors demonstrate how math will make you a better thinker by improving your organizing abilities and providing useful and surprising solutions to common mathematics problems. You'll come away with a grasp of math you never thought possible and a true appreciation for this "queen of the sciences."

Algebraic Geometry has been at the center of much of mathematics for hundreds of years. It is not an easy field to break into, despite its humble beginnings in the study of circles, ellipses, hyperbolas, and parabolas. This text consists of a series of ex

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.

Equations are the lifeblood of mathematics, science, and technology, and this book examines equations of all kinds. With his masterful ability to convey the excitement and elegance of mathematics, author Boris Pritsker explores equations from the simplest to the most complex their history, their charm, and their usefulness in solving problems. The Equations World bridges the fields of algebra, geometry, number theory, and trigonometry, solving more than 280 problems by employing a wide spectrum of techniques. The author demystifies the subject with efficient hints, tricks, and methods that reveal the fun and satisfaction of problem solving. He also demonstrates how equations can serve as important tools for expressing a problem's data, showing the ways in which they assist in fitting parts together to solve the whole puzzle. In addition, brief historical tours reveal the foundations of mathematical thought by tracing the ideas and approaches developed by mathematicians over the centuries. Both recreational mathematicians and ambitious students will find this book an ample source of enlightenment and enjoyment.

Introduction to Linear and Matrix Algebra
From Tenure-track to Emeritus
Linear Algebra: Theory, Intuition, Code
A Self-Teaching Guide
Mathematics
Bridging the Gap to University Mathematics

Maxwell's equations have led to many important mathematical discoveries. This text introduces mathematics students to some of their wonders.

This textbook emphasizes the interplay between algebra and geometry to motivate the study of linear algebra. Matrices and linear transformations are presented as two sides of the same coin, with their connection motivating inquiry throughout the book. By focusing on this interface, the author offers a conceptual appreciation of the mathematics that is at the heart of further theory and applications. Those continuing to a second course in linear algebra will appreciate the companion volume Advanced Linear and Matrix Algebra. Starting with an introduction to vectors, matrices, and linear transformations, the book focuses on building a geometric intuition of what these tools represent. Linear systems offer a powerful application of the ideas seen so far, and lead onto the introduction of subspaces, linear independence, bases, and rank. Investigation then focuses on the algebraic properties of matrices that illuminate the geometry of the linear transformations that they represent. Determinants, eigenvalues, and eigenvectors all benefit from this geometric viewpoint. Throughout, "Extra Topic" sections augment the core content with a wide range of ideas and applications, from linear programming, to power iteration and linear recurrence relations. Exercises of all levels accompany each section, including many designed to be tackled using computer software. Introduction to Linear and Matrix Algebra is ideal for an introductory proof-based linear algebra course. The engaging color presentation and frequent marginal notes showcase the author's visual approach. Students are assumed to have completed one or two university-level mathematics courses, though calculus is not an explicit requirement. Instructors will appreciate the ample opportunities to choose topics that align with the needs of each classroom, and the online homework sets that are available through WeBWorK.

A clear, entertaining development of the number systems required in any course of modern mathematics.

This book collects approximately nine hundred problems that have appeared on the preliminary exams in Berkeley over the last twenty years. It is an invaluable source of problems and solutions. Readers who work through this book will develop problem solving skills in such areas as real analysis, multivariable calculus, differential equations, metric spaces, complex analysis, algebra, and linear algebra.

Stories of Resilience Along the Mathematical Journey

Becoming the Math Teacher You Wish You'd Had

A Treatise on Differential Equations
Algebraic Geometry
A Course of Modern Analysis
This book is an introduction to the language and standard proof methods of mathematics. It is a bridge from the computational courses (such as calculus or differential equations) that students typically encounter in their first year of college to a more abstract outlook. It lays a foundation for more theoretical courses such as topology, analysis and abstract algebra. Although it may be more meaningful to the student who has had some calculus, there is really no prerequisite other than a measure of mathematical maturity.
At last: geometry in an exemplary, accessible and attractive form! The authors emphasise both the intellectually stimulating parts of geometry and routine arguments or computations in concrete or classical cases, as well as practical and physical applications. They also show students the fundamental concepts and the difference between important results and minor technical routines. Altogether, the text presents a coherent high school curriculum for the geometry course, naturally backed by numerous examples and exercises.
Helps to ease the transition between school/college and university mathematics by (re)introducing readers to a range of topics that they will meet in the first year of a degree course in the mathematical sciences, refreshing their knowledge of basic techniques and focussing on areas that are often perceived as the most challenging. Each chapter starts with a "Test Yourself" section so that readers can monitor their progress and readily identify areas where their understanding is incomplete. A range of exercises, complete with full solutions, makes the book ideal for self-study.
Beginning graduate students in mathematics and other quantitative subjects are expected to have a daunting breadth of mathematical knowledge. But few have such a background. This book will help students to see the broad outline of mathematics and to fill in the gaps in their knowledge. The author explains the basic points and a few key results of all the most important undergraduate topics in mathematics, emphasizing the intuitions behind the subject. The topics include linear algebra, vector calculus, differential geometry, real analysis, point-set topology, probability, complex analysis, abstract algebra, and more. An annotated bibliography then offers a guide to further reading and to more rigorous foundations. This book will be an essential resource for advanced undergraduate and beginning graduate students in mathematics, the physical sciences, engineering, computer science, statistics, and economics who need to quickly learn some serious mathematics.
Book of Proof
How to Gamble If You Must
All The Mathematics You Missed
Electricity and Magnetism for Mathematicians
A High School Course
Cracking Mathematics
This classic of advanced statistics is geared toward graduate-level readers and uses the concepts of gambling to develop important ideas in probability theory. The authors have distilled the essence of many years' research into a dozen concise chapters. "Strongly recommended" by the Journal of the American Statistical Association upon its initial publication, this revised and updated edition features contributions from two well-known statisticians that include a new Preface, updated references, and findings from recent research. Following an introductory chapter, the book formulates the gambler's problem and discusses gambling strategies. Succeeding chapters explore the properties associated with casinos and certain measures of subfairness. Concluding chapters relate the scope of the gambler's problems to more general mathematical ideas, including dynamic programming, Bayesian statistics, and stochastic processes. Dover (2014) revised and updated republication of the 1976 Dover edition entitled Inequalities for Stochastic Processes. See every Dover book in print at www.doverpublications.com
Prize-winning study traces the rise of the vector concept from the discovery of complex numbers through the systems of hypercomplex numbers to the final acceptance around 1910 of the modern system of vector analysis.
A sharp mind, like a healthy body, is subject to the same ruleof nature: Use it or lose it Need a calculator just to work out a 15 percent service charge? Not exactly sure how to get the calculator to give you the figureyou need? Turn to this revised and updated edition of All the MathYou'll Ever Need, the friendliest, funniest, and easiest workoutprogram around. In no time, you'll have total command of all the powerfulmathematical tools needed to make numbers work for you. In adollars-and-cents, bottom-line world, where numbers influenceeverything, none of us can afford to let our math skills atrophy.This step-by-step personal math trainer: Refreshes practical math skills for your personal andprofessional needs, with examples based on everyday situations. Offers straightforward techniques for working with decimals and fractions. Demonstrates simple ways to figure discounts, calculatemortgage interest rates, and work out time, rate, and distance problems. Contains no complex formulas and no unnecessary technical terms.
This comprehensive guide covers the history and development of mathematics, from the Ancient Egyptians and Pythagoreans to key figures such as Galileo, Dodgson, Babbage and Lovelace through to contemporary work of the 21st century. It tells of the remarkable stories that have shaped mathematics and also features sections on how maths can be used to solve the mysteries of the universe, what the Prisoner's Dilemma is as well as Fermat's Last Theorem amongst many more. Accessible, well-informed and fully-illustrated, this is a book that shows perfectly just how varied and fascinating mathematics is as a subject.
A History of Vector Analysis
The Survival of a Mathematician
A Theory Revolutionizing Technology and Science
Visual Complex Analysis
The Evolution of the Idea of a Vectorial System
Marvels, Novelties, and Neglected Gems That Are Rarely Taught in Math Class
This expanded edition of the original bestseller, How to Teach Mathematics, offers hands-on guidance for teaching mathematics in the modern classroom setting. Twelve appendices have been added that are written by experts who have a wide range of opinions and viewpoints on the major teaching issues. Eschewing generalities, the award-winning author and teacher, Steven Krantz, addresses issues such as preparation, presentation, discipline, and grading. He also emphasizes specifics--from how to deal with students who beg for extra points on an exam to mastering blackboard technique to how to use applications effectively. No other contemporary book addresses the principles of good teaching in such a comprehensive and cogent manner. The broad appeal of this text makes it accessible to areas other than mathematics. The principles presented can apply to a variety of disciplines--from music to English to business. Lively and humorous, yet serious and sensible, this volume offers readers incisive information and practical applications.
Major survey offers comprehensive, coherent discussions of analytic geometry, algebra, differential equations, calculus of variations, functions of a complex variable, prime numbers, linear and non-Euclidean geometry, topology, functional analysis, more. 1963 edition.
Written by a pair of math teachers and based on their classroom notes and experiences, this introductory treatment of theory, proof techniques, and related concepts is designed for undergraduate courses. No knowledge of calculus is assumed, making it a useful text for students at many levels. The focus is on teaching students to prove theorems and write mathematical proofs so that others can read them. Since proving theorems takes lots of practice, this text is designed to provide plenty of exercises. The authors break the theorems into pieces and walk readers through examples, encouraging them to use mathematical notation and write proofs themselves. Topics include propositional logic, set notation, basic set theory proofs, relations, functions, induction, countability, and some combinatorics, including a small amount of probability. The text is ideal for courses in discrete mathematics or logic and set theory, and its accessibility makes the book equally suitable for classes in mathematics for liberal arts students or courses geared toward proof writing in mathematics.
You may have watched hundreds of episodes of The Simpsons (and its sister show Futurama) without ever realising that they contain enough maths to form an entire university course. In The Simpsons and Their Mathematical Secrets, Simon Singh explains how the brilliant writers, some of the mathematicians, have smuggled in mathematical jokes throughout the cartoon's twenty-five year history, exploring everything from to Mersenne primes, from Euler's equation to the unsolved riddle of P vs. NP, from perfect numbers to narcissistic numbers, and much more. With wit, clarity and a true fan's zeal, Singh analyses such memorable episodes as 'Bart the Genius' and 'Homer3' to offer an entirely new insight into the most successful show in television history.
The Power of Mathematical Thinking
The Mathematics of Love
You, this book and 4,000 years of theories
The Equations World
All the Math You Missed
The Simpsons and Their Mathematical Secrets
Topology continues to be a topic of prime importance in contemporary mathematics, but until the publication of this book there were few if any introductions to topology for undergraduates. This book remedied that need by offering a carefully thought-out, graduated approach to point set topology at the undergraduate level. To make the book as accessible as possible, the author approaches topology from a geometric and axiomatic standpoint; geometric, because most students come to the subject with a good deal of geometry behind them, enabling them to use their geometric intuition; axiomatic, because it parallels the student's experience with modern algebra, and keeps the book in harmony with current trends in mathematics. After a discussion of such preliminary topics as the algebra of sets, Euler-Venn diagrams and infinite sets, the author takes up basic definitions and theorems regarding topological spaces (Chapter 1). The second chapter deals with continuous functions (mappings) and homeomorphisms, followed by two chapters on special types of topological spaces (varieties of compactness and varieties of connectedness). Chapter 5 covers metric spaces. Since basic point set topology serves as a foundation not only for functional analysis but also for more advanced work in point set topology and algebraic topology, the author has included topics aimed at students with interests other than analysis. Moreover, Dr. Baum has supplied quite detailed proofs in the beginning to help students approaching this type of axiomatic mathematics for the first time. Similarly, in the first part of the book problems are elementary, but they become progressively more difficult toward the end of the book. References have been supplied to suggest further reading to the interested student.
Its Content, Methods and Meaning
The Little Book of Mathematical Principles, Theories & Things
Living Proof
All the Math You'll Ever Need