

Is God A Mathematician Mario Livio

Is God a Mathematician? Is God a Mathematician? Is God a Mathematician? Galileo The Equation that Couldn't Be Solved Brilliant Blunders Why? The Legacy of Mario Pieri on the Foundations and Philosophy of Mathematics Power-Up Complex Analysis The Legacy of Mario Pieri in Geometry and Arithmetic Applied Probability and Statistics Mathematical Theory of Incompressible Nonviscous Fluids The Golden Ratio Math Games for Middle School Rusalka The Mathematical Theory of Dilute Gases Piecewise-smooth Dynamical Systems Mathematics in Architecture Math with Bad Drawings How Not to Be Wrong The Amazing Journey of Reason The Language God Talks The Math of God Math through the Ages: A Gentle History for Teachers and Others Expanded Second Edition The Golden Ratio Generalized Ricci Flow How Mathematicians Think The Fourth Dimension: Toward a Geometry of Higher Reality The Golden Ratio Applied Stochastic Processes Super Mario Philosophy in an Age of Science Mathematicians and Their Gods The Mathematical Language of Quantum Theory The Legacy of Mario Pieri in Geometry and Arithmetic Spectral Computations for Bounded Operators Weapons of Math Destruction Pizza Pizzazz! Introduction to Technical Mathematics

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Introduction to Technical Mathematics Jun 26 2019 Introduction to Technical Mathematics, Fifth Edition, has been thoroughly revised and modernized with up-to-date applications, an expanded art program, and new pedagogy to help today's readers relate to the mathematics in today's world. The new edition continues to provide a thorough review of arithmetic and a solid foundation in algebra, geometry, and trigonometry. In addition to thousands of exercises, the examples and problems in this text include a wealth of applications from various technological fields: electronics, mechanics, civil engineering, forestry, architecture, industrial engineering and design, physics, chemistry, and computer science. To enhance your course, the fifth edition is now available with Addison-Wesley's MathXL® and MyMathLab™ technologies. Signed Numbers; Units of Measurement and Approximate Numbers; Introduction to Algebra; Simple Equations and Inequalities; Graphs; Introduction to Geometry; Simultaneous Linear Equations; Factoring; Algebraic Fractions; Exponents, Roots and Radicals; Quadratic Equations; Exponential and Logarithmic Functions; Right Triangle Trigonometry; Oblique Triangles and Vectors; Graphs of Trigonometric Functions; Complex Numbers; Introduction to Data Analysis. For all readers interested in Technical Mathematics. Piecewise-smooth Dynamical Systems May 18 2021 This book presents a coherent framework for understanding the dynamics of piecewise-smooth and hybrid systems. An informal introduction expounds the ubiquity of such models via numerous. The results are presented in an informal style, and illustrated with many examples. The book is aimed at a wide audience of applied mathematicians, engineers and scientists at the beginning postgraduate level. Almost no mathematical background is assumed other than basic calculus and algebra. The Golden Ratio Sep 09 2020 What do the Parthenon in Greece, crosses in graveyards, the ratio of the height of a woman's navel to a woman's height, sunflowers and Leonardo da Vinci's Mona Lisa have in common? The answer is that these disparate elements share a geometrical proportion of ancient origin commonly known as the golden ratio, or expressed numerically as phi. fractals and DNA on the way, the author takes us into the heart of this extraordinary number. He gives an account of the phi-obsessed individuals who devoted their lives to discovering its secrets - from the Pythagoreans who believed that the study of the Golden Ratio would reveal the hand of God, to the astronomer Johannes Kepler who felt that phi was the greatest treasure of geometry, to the modern day scientists who are discovering ever more remarkable ramifications of this strange, almost mystical, number. Rusalka Jul 20 2021 This book serves as an aid to anyone seeking to perform and gain a deeper understanding of this multi-layered opera, which so trenchantly asks what it means to be human, to love, and to be loved in return. Galileo Aug 01 2022 An "intriguing and accessible" (Publishers Weekly) interpretation of the life of Galileo Galilei, one of history's greatest and most fascinating scientists, that sheds new light on his discoveries and how he was challenged by science deniers. "We really need this story now, because we're living through the next chapter of science denial" (Bill McKibben). Galileo's story may be more relevant today than ever before. At present, we face enormous crises—such as minimizing the dangers of climate change—because the science behind these threats is erroneously questioned or ignored. Galileo encountered this problem 400 years ago. His discoveries, based on careful observations and ingenious experiments, contradicted conventional wisdom and the teachings of the church at the time. Consequently, in a blatant assault on freedom of thought, his books were forbidden by church authorities. Astrophysicist and bestselling author Mario Livio draws on his own scientific expertise and uses his "gifts as a great storyteller" (The Washington Post) to provide a "refreshing perspective" (Booklist) into how Galileo reached his bold new conclusions about the cosmos and the laws of nature. A freethinker who followed the evidence wherever it led him, Galileo was one of the most significant figures behind the scientific revolution. He believed that every educated person should know science as well as literature, and insisted on reaching the widest audience possible, publishing his books in Italian rather than Latin. Galileo was put on trial with his life in the balance for refusing to renounce his scientific convictions. He remains a hero and inspiration to scientists and all of those who respect science—which, as Livio reminds us in this "admirably clear and concise" (The Times, London) book, remains threatened everyday. The Fourth Dimension: Toward a Geometry of Higher Reality Jun 06 2020 One of the most talented contemporary authors of cutting-edge math and science books conducts a fascinating tour of a higher reality, the fourth dimension. Includes problems, puzzles, and 200 drawings. "Informative and mind-dazzling." — Martin Gardner. The Equation that Couldn't Be Solved Jun 30 2022 What do Bach's compositions, Rubik's Cube, the way we choose our mates, and the physics of subatomic particles have in common? All are governed by the laws of symmetry, which elegantly unify scientific and artistic principles. Yet the mathematical language of symmetry-known as group theory-did not emerge from the study of symmetry at all, but from an equation that couldn't be solved. For thousands of years mathematicians solved progressively more difficult algebraic equations, until they encountered the quintic equation, which resisted solution for three centuries. Working independently, two great prodigies ultimately proved that the quintic cannot be solved by a simple formula. These geniuses, a Norwegian named Niels Henrik Abel and a romantic Frenchman named Évariste Galois, both died tragically young. Their incredible labor, however, produced the origins of group theory. The first extensive, popular account of the mathematics of symmetry and order, The Equation That Couldn't Be Solved is told not through abstract formulas but in a beautifully written and dramatic account of the lives and work of some of the greatest and most intriguing mathematicians in history. How Mathematicians Think Jul 08 2020 To many outsiders, mathematicians appear to think like computers, grimly grinding away with a strict formal logic and moving methodically--even algorithmically--from one black-and-white deduction to another. Yet mathematicians often describe their most important breakthroughs as creative, intuitive responses to ambiguity, contradiction, and paradox. A unique examination of this less-familiar aspect of mathematics, How Mathematicians Think reveals that mathematics is a profoundly creative activity and not just a body of formalized rules and results. Nonlogical qualities, William Byers shows, play an essential role in mathematics. Ambiguities, contradictions, and paradoxes can arise when ideas developed in different contexts come into contact. Uncertainties and conflicts do not impede but rather spur the development of mathematics. Creativity often means bringing apparently incompatible perspectives together as complementary aspects of a new, more subtle theory. The secret of mathematics is not to be found only in its logical structure. The creative dimensions of mathematical work have great implications for our notions of mathematical and scientific truth, and How Mathematicians Think provides a novel approach to many fundamental questions. Is mathematics objectively true? Is it discovered or invented? And is there such a thing as a "final" scientific theory? Ultimately, How Mathematicians Think shows that the nature of mathematical thinking can teach us a great deal about the human condition itself. Math Games for Middle School Aug 21 2021 Uses explanations, word problems, and games to cover some mathematical topics that middle school students need to know, including the invention of numerical notations, basic arithmetical operations, measurements, geometry, graphs, and probability. How Not to Be Wrong Feb 12 2021 The columnist for Slate's popular "Do the Math" celebrates the logical, illuminating nature of math in today's world, sharing in accessible language mathematical approaches that demystify complex and everyday problems. Mathematical Theory of Incompressible Nonviscous Fluids Oct 23 2021 Fluid dynamics is an ancient science incredibly alive today. Modern technology and new needs require a deeper knowledge of the behavior of real fluids, and new discoveries or steps forward pose, quite often, challenging and difficult new mathematical problems. In this framework, a special role is played by incompressible nonviscous (sometimes called perfect) flows. This is a mathematical model consisting essentially of an evolution equation (the Euler equation) for the velocity field of fluids. Such an equation, which is nothing other than the Newton laws plus some additional structural hypotheses, was discovered by Euler in 1755, and although it is more than two centuries old, many fundamental questions concerning its solutions are still open. In particular, it is not known whether the solutions, for reasonably general initial conditions, develop singularities in a finite time, and very little is known about the long-term behavior of smooth solutions. These and other basic problems are still open, and this is one of the reasons why the mathematical theory of perfect flows is far from being completed. Incompressible flows have been attacked, by many distinguished mathematicians, with a large variety of mathematical techniques so that, today, this field constitutes a very rich and stimulating part of applied mathematics. The Golden Ratio Sep 21 2021 Throughout history, thinkers from mathematicians to theologians have pondered the mysterious relationship between numbers and the nature of reality. In this fascinating book, Mario Livio tells the tale of a number at the heart of that mystery: phi, or 1.6180339887... This curious mathematical relationship, widely known as "The Golden Ratio," was discovered by Euclid more than two thousand years ago because of its crucial role in the construction of the pentagram, to which magical properties had been attributed. Since then it has shown a propensity to appear in the most astonishing variety of places, from mollusk shells, sunflower florets, and rose petals to the shape of the galaxy. Psychological studies have investigated whether the Golden Ratio is the most aesthetically pleasing proportion extant, and it has been asserted that the creators of the Pyramids and the Parthenon employed it. It is believed to feature in works of art from Leonardo da Vinci's Mona Lisa to Salvador Dalí's The Sacrament of the Last Supper, and poets and composers have used it in their works. It has even been found to be connected to the behavior of the stock market! The Golden Ratio is a captivating journey through art and architecture, botany and biology, physics and mathematics. It tells the human story of numerous phi-fixated individuals, including the followers of Pythagoras who believed that this proportion revealed the hand of God; astronomer Johannes Kepler, who saw phi as the greatest treasure of geometry; such Renaissance thinkers as mathematician Leonardo Fibonacci of Pisa; and such masters of the modern world as Goethe, Cézanne, Bartók, and physicist Roger Penrose. Wherever his quest for the meaning of phi takes him, Mario Livio reveals the world as a place where order, beauty, and eternal mystery will always coexist. Philosophy in an Age of Science Feb 01 2020 Hilary Putnam's unceasing self-criticism has led to the frequent changes of mind he is famous for, but his thinking is also marked by considerable continuity. A simultaneous interest in science and ethics is unusual in the current climate of contention. His long characterized his thought. In Philosophy in an Age of Science, Putnam collects his papers for publication. His first volume in almost two decades. Mario De Caro and David Macarthur's introduction identifies central themes to help the reader negotiate between Putnam past and Putnam present: his critique of logical positivism; his enduring aspiration to be realist about rational normativity; his anti-essentialism about a range of central philosophical notions; his reconciliation of the scientific worldview and the humanistic tradition; and his movement from reductive scientific naturalism to liberal naturalism. Putnam returns here to some of his first enthusiasms in philosophy, such as logic, mathematics, and quantum mechanics. The reader is given a glimpse, too, of ideas currently in development on the subject of perception. Putnam's work, contributing to a broad range of philosophical inquiry, has been said to represent a history of recent philosophy in outline. Here it also delineates a possible future.

The Math of God Nov 11 2020 This text contains the illustrations of a numerical system that transcends all spoken languages. Within this book the symbols are translated into Chinese, Western Arabic, Devanagari, Eastern Arabic, Bengali, Tamil, and Thai numerals. Infinite numbers are broken down into a few intersecting lines and made comprehensible. All symbols are made up of connecting crucifixes.

Brilliant Blunders May 30 2022 "Drawing on the lives of five great scientists -- Charles Darwin, William Thomson (Lord Kelvin), Linus Pauling, Fred Hoyle and Albert Einstein -- scientist/author Mario Livio shows how even the greatest scientists made major mistakes and how science built on these errors to achieve breakthroughs, especially into the evolution of life and the universe"--

The Legacy of Mario Pieri in Geometry and Arithmetic Oct 30 2019 The Italian mathematician Mario Pieri (1860-1913) played an integral part in the research groups of Corrado Segre and Giuseppe Peano, and thus had a significant, yet somewhat underappreciated impact on several branches of mathematics, particularly on the development of algebraic geometry and the foundations of mathematics in the years around the turn of the 20th century. This book is the first in a series of three volumes that are dedicated to countering that neglect and comprehensively examining Pieri's life, mathematical work and influence in such diverse fields as mathematical logic, algebraic geometry, number theory, inverse geometry, vector analysis, and differential geometry. *The Legacy of Mario Pieri in Geometry and Arithmetic* introduces readers to Pieri's career and his studies in foundations, from both historical and modern viewpoints, placing his life and research in context and tracing his influence on his contemporaries as well as more recent mathematicians. The text also provides a glimpse of the Italian academic world of Pieri's time, and its relationship with the developing international mathematics community. Included in this volume are the first English translations, along with analyses, of two of his most important axiomatizations—his postulates for arithmetic, which Peano judged superior to his own; and his foundation of elementary geometry on the basis of point and sphere, which Alfred Tarski used as a basis for his own system. Combining an engaging exposition, little-known historical information, exhaustive references and an excellent index, this text will be of interest to graduate students, researchers and historians with a general knowledge of logic and advanced mathematics, and it requires no specialized experience in mathematical logic or the foundations of geometry.

Super Mario Mar 04 2020 The definitive story of the rise of Nintendo. In 1981, Nintendo of America was a one-year-old business already on the brink of failure. Its president, Mino Arakawa, was stuck with two thousand unsold arcade cabinets for a dud of a game (Radar Scope). So he hatched a plan. Back in Japan, a boyish, shaggy-haired staff artist named Shigeru Miyamoto designed a new game for the unsold cabinets featuring an angry gorilla and a small jumping man. Donkey Kong brought in \$180 million in its first year alone and launched the career of a short, chubby plumber named Mario. Since then, Mario has starred in over two hundred games, generating profits in the billions. He is more recognizable than Mickey Mouse, yet he's little more than a mustache in bib overalls. How did a mere smear of pixels gain such huge popularity? Super Mario tells the story behind the Nintendo games millions of us grew up with, explaining how a Japanese trading card company rose to dominate the fiercely competitive video-game industry.

Applied Probability and Statistics Nov 23 2021 This book moves systematically through the topic of applied probability from an introductory chapter to such topics as random variables and vectors, stochastic processes, estimation, testing and regression. The topics are well chosen and the presentation is enriched by many examples from real life. Each chapter concludes with many original, solved and unsolved problems and hundreds of multiple choice questions, enabling those unfamiliar with the topics to master them. Additionally appealing are historical notes on the mathematicians mentioned throughout, and a useful bibliography. A distinguishing character of the book is its thorough and succinct handling of the varied topics.

Mathematicians and Their Gods Jan 02 2020 To open a newspaper or turn on the television it would appear that science and religion are polar opposites - mutually exclusive bedfellows competing for hearts and minds. There is little indication of the rich interaction between religion and science throughout history, much of which continues today. From ancient to modern times, mathematicians have played a key role in this interaction. This is a book on the relationship between mathematics and religious beliefs. It aims to show that, throughout scientific history, mathematics has been used to make sense of the 'big' questions of life, and these is rich in both culture and character. Chapters cover a fascinating range of topics including the Sect of the Pythagoreans, Newton's views on the Apocalypse, Charles Dodgson's Anglican faith and Godel's proof of the existence of God.--

Math with Bad Drawings Mar 16 2021 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 crisis 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-stranded and math-enamored alike.

Is God a Mathematician? Sep 02 2022 This fascinating exploration of the great discoveries of history's most important mathematicians seeks an answer to the eternal question: Does mathematics hold the key to understanding the mysteries of the physical world? Illustrations throughout.

Is God a Mathematician? Oct 03 2022 Explores the plausibility of mathematical answers to puzzles in the physical world, in an accessible exploration of the lives and thoughts of such figures as Archimedes, Galileo, and Newton. By the author of *The Golden Ratio*. 50,000 first printing.

Applied Stochastic Processes Apr 04 2020 This book uses a distinctly applied framework to present the most important topics in stochastic processes, including Gaussian and Markovian processes, Markov Chains, Poisson processes, Brownian motion and queueing theory. The book also examines in detail special diffusion processes, with implications for finance, various generalizations of Poisson processes, and renewal processes. It contains numerous examples and approximately 350 advanced problems that reinforce both concepts and applications. Entertaining mini-biographies of mathematicians give an enriching historical context. The book includes statistical tables and solutions to the even-numbered problems at the end.

The Golden Ratio May 06 2020 *The Golden Ratio* examines the presence of this divine number in art and architecture throughout history, as well as its ubiquity among plants, animals, and even the cosmos. This gorgeous book—with layflat dimensions that closely approximate the golden ratio—features clear, enlightening, and entertaining commentary alongside stunning full-color illustrations by Venezuelan artist and architect Rafael Araujo. From the pyramids of Giza, to quasicrystals, to the proportions of the human face, the golden ratio has an infinite capacity to generate shapes with exquisite properties. This book invites you to take a new look at this timeless topic, with a compilation of research and information worthy of a text book, accompanied by over 200 beautiful color illustrations that transform this into the ultimate coffee table book. Author Gary Meisner shares the results of his twenty-year investigation and collaboration with thousands of people across the globe in dozens of professions and walks of life. The evidence will close the gaps of understanding related to many claims of the golden ratio's appearances and applications, and present new findings to take our knowledge further yet. Whoever you are, and whatever you may know about this topic, you'll find something new, interesting, and informative in this book, and may find yourself challenged to see, apply, and share this unique number of mathematics and science in new ways.

Complex Analysis Jan 26 2022 A selection of some important topics in complex analysis, intended as a sequel to the author's *Classical complex analysis* (see preceding entry). The five chapters are devoted to analytic continuation; conformal mappings, univalent functions, and nonconformal mappings; entire function; meromorphic function

Why? Apr 28 2022 Astrophysicist and author Mario Livio investigates perhaps the most human of all our characteristics—curiosity—in this “lively, expert, and definitely not dumbed-down account” (Kirkus Reviews) as he explores our innate desire to know why. Experiments demonstrate that people are more distracted when they overhear a phone conversation—where they can know only one side of the dialogue—than when they overhear two people talking and know both sides. Why does half a conversation make us more curious than a whole conversation? “Have you ever wondered why we wonder why? Mario Livio has, and he takes you on a fascinating quest to understand the origin and mechanisms of our curiosity. I thoroughly recommend it.” (Adam Riess, Nobel Prize Winner in Physics, 2011). Curiosity is not only at the heart of mystery and suspense novels, it is also essential to other creative endeavors, from painting to sculpture to music. It is the principal driver of basic scientific research. Even so, there is still no definitive scientific consensus about why we humans are so curious, or about the mechanisms in our brain that are responsible for curiosity. In the ever-fascinating *Why?* Livio interviewed scientists in several fields to explore the nature of curiosity. He examined the lives of two of history's most curious geniuses, Leonardo da Vinci and Richard Feynman. He also talked to people with boundless curiosity: a superstar rock guitarist who is also an astrophysicist; an astronaut with degrees in computer science, biology, literature, and medicine. What drives these people to be curious about so many subjects? An astrophysicist who has written about mathematics, biology, and now psychology and neuroscience, Livio has firsthand knowledge of his subject which he explores in a lucid, entertaining way that will captivate anyone who is curious about curiosity.

The Amazing Journey of Reason Jan 14 2021 This Open Access book explores questions such as why and how did the first biological cells appear? And then complex organisms, brains, societies and now—connected human societies? Physicists have good models for describing the evolution of the universe since the Big Bang, but can we apply the same concepts to the evolution of aggregated matter—living matter included? *The Amazing Journey* analyzes the latest results in chemistry, biology, neuroscience, anthropology and sociology under the light of the evolution of intelligence, seen as the ability of processing information. The main strength of this book is using just two concepts used in physics—information and energy—to explain: The emergence and evolution of life: prokaryotes, eukaryotes and complex organisms The emergence and evolution of the brain The emergence and evolution of societies (human and not) Possible evolution of our “internet society” and the role that Artificial Intelligence is playing

Is God a Mathematician? Nov 04 2022 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.

Generalized Ricci Flow Aug 09 2020 The generalized Ricci flow is a geometric evolution equation which has recently emerged from investigations into mathematical physics, Hitchin's generalized geometry program, and complex geometry. This book gives an introduction to this new area, discusses recent developments, and formulates open questions and conjectures for future study. The text begins with an introduction to fundamental aspects of generalized Riemannian, complex, and Kähler geometry. This leads to an extension of the classical Einstein-Hilbert action, which yields natural extensions of Einstein and Calabi-Yau structures as ‘canonical metrics’ in generalized Riemannian and complex geometry. The book then introduces generalized Ricci flow as a tool for constructing such metrics and proves extensions of the fundamental Hamilton/Perelman regularity theory of Ricci flow. These results are refined in the setting of generalized complex geometry, where the generalized Ricci flow is shown to preserve various integrability conditions, taking the form of pluriclosed flow and generalized Kähler-Ricci flow, leading to global convergence results and applications to complex geometry. Finally, the book gives a purely mathematical introduction to the physical idea of T-duality and discusses its relationship to generalized Ricci flow. The book is suitable for graduate students and researchers with a background in Riemannian and complex geometry who are interested in the theory of geometric evolution equations.

The Legacy of Mario Pieri in Geometry and Arithmetic Dec 25 2021 This book is the first in a series of three volumes that comprehensively examine Mario Pieri's life, mathematical work and influence. The book introduces readers to Pieri's career and his studies in foundations, from both historical and modern viewpoints. Included in this volume are the first English translations, along with analyses, of two of his most important axiomatizations — one in arithmetic and one in geometry. The book combines an engaging exposition, little-known historical notes, exhaustive references and an excellent index. And yet the book requires no specialized experience in mathematical logic or the foundations of geometry.

Weapons of Math Destruction Aug 28 2019 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 uncontrollable, 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.

Mathematics in Architecture Apr 16 2021

The Legacy of Mario Pieri on the Foundations and Philosophy of Mathematics Mar 28 2022 Mario Pieri on the Foundations of Philosophy and Mathematics introduces readers to Pieri’s career and his studies in foundations, from both historical and modern viewpoints, placing his life and research in context and tracing his influence on his contemporaries as well as more recent mathematicians. The text also includes translations and commentary on Pieri’s original analyses on projective geometry, transformational geometry.

Power-Up Feb 24 2022 “Did you know that every time you pick up the controller to your PlayStation or Xbox, you are entering a game world steeped in mathematics? Power-Up reveals the hidden mathematics in many of today’s most popular video games and explains why mathematical learning doesn’t just happen in the classroom or from books—you’re doing it without even realizing it when you play games on your cell phone. In this lively and entertaining book, Matthew Lane discusses how gamers are engaging with the traveling salesman problem when they play Assassin’s Creed, why it is mathematically impossible for Mario to jump through the Mushroom Kingdom in Super Mario Bros., and how The Sims teaches us the mathematical costs of maintaining relationships. He looks at mathematical pursuit problems in classic games like Missile Command and Ms. Pac-Man, and how each time you play Tetris, you’re grappling with one of the most famous unsolved problems in all of mathematics and computer science. Along the way, Lane discusses why Family Feud and Pictionary make for ho-hum video games, how realism in video games (or the lack of it) influences learning, what video games can teach us about the mathematics of voting, the mathematics of designing video games, and much more. Power-Up shows how the world of video games is an unexpectedly rich medium for learning about the beautiful mathematical ideas that touch all aspects of our lives—including our virtual ones.”—Dust jacket.

The Language God Talks Dec 13 2020

The Mathematical Theory of Dilute Gases Jun 18 2021 The idea for this book was conceived by the authors some time in 1988, and a first outline of the manuscript was drawn up during a summer school on mathematical physics held in Ravello in September 1988, where all three of us were present as lecturers or organizers. The project was in some sense inherited from our friend Marvin Shinbrot, who had planned a book about recent progress for the Boltzmann equation, but, due to his untimely death in 1987, never got to do it. When we drew up the first outline, we could not anticipate how long the actual writing would stretch out. Our ambitions were high: We wanted to cover the modern mathematical theory of the Boltzmann equation, with rigorous proofs, in a complete and readable volume. As the years progressed, we withdrew to some degree from this first ambition—there was just too much material, too scattered, sometimes incomplete, sometimes not rigorous enough. However, in the writing process itself, the need for the book became ever more apparent. The last twenty years have seen an amazing number of significant results in the field, many of them published in incomplete form, sometimes in obscure places, and sometimes without technical details. We made it our objective to collect these results, classify them, and present them as best we could. The choice of topics remains, of course, subjective.

The Mathematical Language of Quantum Theory Dec 01 2019 For almost every student of physics, the first course on quantum theory raises a lot of puzzling questions and creates a very uncertain picture of the quantum world. This book presents a clear and detailed exposition of the fundamental concepts of quantum theory: states, effects, observables, channels and instruments. It introduces several up-to-date topics, such as state discrimination, quantum tomography, measurement disturbance and entanglement distillation. A separate chapter is devoted to quantum entanglement. The theory is illustrated with numerous examples, reflecting recent developments in the field. The treatment emphasises quantum information, though its general approach makes it a useful resource for graduate students and researchers in all subfields of quantum theory. Focusing on mathematically precise formulations, the book summarises the relevant mathematics.

Math through the Ages: A Gentle History for Teachers and Others Expanded Second Edition Oct 11 2020 Where did math come from? Who thought up all those algebra symbols, and why? What is the story behind . . . negative numbers? . . . the metric system? . . . quadratic equations? . . . sine and cosine? . . . logs? The 30 independent historical sketches in *Math through the Ages* answer these questions and many others in an informal, easygoing style that is accessible to teachers, students, and anyone who is curious about the history of mathematical ideas. Each sketch includes Questions and Projects to help you learn more about its topic and to see how the main ideas fit into the bigger picture of history. The 30 short stories are preceded by a 58-page bird’s-eye overview of the entire panorama of mathematical history, a whirlwind tour of the most important people, events, and trends that shaped the mathematics we know today. “What to Read Next” and reading suggestions after each sketch provide starting points for readers who want to learn more. This book is ideal for a broad spectrum of audiences, including students in history of mathematics courses at the late high school or early college level, pre-service and in-service teachers, and anyone who just wants to know a little more about the origins of mathematics.

Pizza Pizzazz! Jul 28 2019 Mario the Pizza Man uses outrageous toppings and his knowledge of fractions to make perfect pizzas that can be divided up. Includes related math activities.

Spectral Computations for Bounded Operators Sep 29 2019 Exact eigenvalues, eigenvectors, and principal vectors of operators with infinite dimensional ranges can rarely be found. Therefore, one must approximate such operators by finite rank operators, then solve the original eigenvalue problem approximately. Serving as both an outstanding text for graduate students and as a source of current results for research scientists, *Spectral Computations for Bounded Operators* addresses the issue of solving eigenvalue problems for operators on infinite dimensional spaces. From a review of classical spectral theory through concrete approximation techniques to finite dimensional situations that can be implemented on a computer, this volume illustrates the marriage of pure and applied mathematics. It contains a variety of recent developments, including a new type of approximation that encompasses a variety of approximation methods but is simple to verify in practice. It also suggests a new stopping criterion for the QR Method and outlines advances in both the iterative refinement and acceleration techniques for improving the accuracy of approximations. The authors illustrate all definitions and results with elementary examples and include numerous exercises. *Spectral Computations for Bounded Operators* thus serves as both an outstanding text for second-year graduate students and as a source of current results for research scientists.