Five Equations That Changed The World The Power And Poetry Of Mathematics

Perfect RigourMathematics for Machine LearningIntroduction to Applied Linear AlgebraCinco ecuaciones que cambiaron el mundoRelativity and Quantum Physics For BeginnersScience Teaching ReconsideredThe Mathematics of LifeIn Pursuit of the UnknownFive Equations That Changed the WorldCan a Smart Person Believe in God?The Equation that Couldn't Be SolvedLearning to ListenProving Einstein RightThe Knowledge Machine: How Irrationality Created Modern ScienceAdvanced CalculusCalculusThe Endurance DietMath Girls 3The Math BookEinstein's Miraculous YearInverse Problem Theory and Methods for Model Parameter EstimationThe Mathematical Writings of Évariste GaloisFive Equations That Changed the WorldThe Knot BookEuclid's WindowFive Equations That Changed the WorldThe Ten Equations That Rule the WorldProfessor Stewart's Cabinet of Mathematical CuriositiesProofs from THE BOOKIngeniumExam Prep for: Five Equations That Changed the World ; The Orbital Mechanics for Engineering StudentsBridges to InfinityThe Foundations of MathematicsThe End of Life as We Know ItA Most Elegant EquationPrincipia MathematicaDo Dice Play God?Amazing TruthsUniversity Physics

Perfect Rigour

Are science and religion hopelessly at odds with one another in their view of truth? Not if you read physicist Michael Guillen's new book on truth, which shows that the two

sources of truth, scientific and religious, are not opposed but in surprising agreement

Mathematics for Machine Learning

After 1905, physics would never be the same. In those 12 months, Einstein shattered many cherished scientific beliefs with five great papers that would establish him as the world's leading physicist. On their 100th anniversary, this book brings those papers together in an accessible format.

Introduction to Applied Linear Algebra

"The Knowledge Machine is the most stunningly illuminating book of the last several decades regarding the all-important scientific enterprise." —Rebecca Newberger Goldstein, author of Plato at the Googleplex A paradigm-shifting work, The Knowledge Machine revolutionizes our understanding of the origins and structure of science. • Why is science so powerful? • Why did it take so long—two thousand years after the invention of philosophy and mathematics—for the human race to start using science to learn the secrets of the universe? In a groundbreaking work that blends science, philosophy, and history, leading philosopher of science Michael Strevens answers these challenging questions, showing how science came about only once thinkers stumbled upon the astonishing idea that scientific breakthroughs could be accomplished by breaking the rules of logical argument. Like such classic works as Karl Popper's The Logic of Scientific Discovery and Thomas Kuhn's The Structure of Scientific Revolutions, The Knowledge Machine grapples with the meaning and origins of science, using a plethora of vivid historical examples to demonstrate that

scientists willfully ignore religion, theoretical beauty, and even philosophy to embrace a constricted code of argument whose very narrowness channels unprecedented energy into empirical observation and experimentation. Strevens calls this scientific code the iron rule of explanation, and reveals the way in which the rule, precisely because it is unreasonably close-minded, overcomes individual prejudices to lead humanity inexorably toward the secrets of nature. "With a mixture of philosophical and historical argument, and written in an engrossing style" (Alan Ryan), The Knowledge Machine provides captivating portraits of some of the greatest luminaries in science's history, including Isaac Newton, the chief architect of modern science and its foundational theories of motion and gravitation; William Whewell, perhaps the greatest philosopher-scientist of the early nineteenth century; and Murray Gell-Mann, discoverer of the quark. Today, Strevens argues, in the face of threats from a changing climate and global pandemics, the idiosyncratic but highly effective scientific knowledge machine must be protected from politicians, commercial interests, and even scientists themselves who seek to open it up, to make it less narrow and more rational—and thus to undermine its devotedly empirical search for truth. Rich with illuminating and often delightfully quirky illustrations, The Knowledge Machine, written in a winningly accessible style that belies the import of its revisionist and groundbreaking concepts, radically reframes much of what we thought we knew about the origins of the modern world.

Cinco ecuaciones que cambiaron el mundo

University Physics is designed for the two- or three-semester calculus-based physics course. The text has been developed

to meet the scope and sequence of most university physics courses and provides a foundation for a career in mathematics, science, or engineering. The book provides an important opportunity for students to learn the core concepts of physics and understand how those concepts apply to their lives and to the world around them. Due to the comprehensive nature of the material, we are offering the book in three volumes for flexibility and efficiency. Coverage and Scope Our University Physics textbook adheres to the scope and sequence of most two- and three-semester physics courses nationwide. We have worked to make physics interesting and accessible to students while maintaining the mathematical rigor inherent in the subject. With this objective in mind, the content of this textbook has been developed and arranged to provide a logical progression from fundamental to more advanced concepts, building upon what students have already learned and emphasizing connections between topics and between theory and applications. The goal of each section is to enable students not just to recognize concepts, but to work with them in ways that will be useful in later courses and future careers. The organization and pedagogical features were developed and vetted with feedback from science educators dedicated to the project. VOLUME III Unit 1: Optics Chapter 1: The Nature of Light Chapter 2: Geometric Optics and Image Formation Chapter 3: Interference Chapter 4: Diffraction Unit 2: Modern Physics Chapter 5: Relativity Chapter 6: Photons and Matter Waves Chapter 7: Quantum Mechanics Chapter 8: Atomic Structure Chapter 9: Condensed Matter Physics Chapter 10: Nuclear Physics Chapter 11: Particle Physics and Cosmology

Relativity and Quantum Physics For Beginners

The seventeen equations that form the basis for life as we know it Most people are familiar with history's great equations: Newton's Law of Gravity, for instance, or Einstein's theory of relativity. But the way these mathematical breakthroughs have contributed to human progress is seldom appreciated. In In Pursuit of the Unknown, celebrated mathematician Ian Stewart untangles the roots of our most important mathematical statements to show that equations have long been a driving force behind nearly every aspect of our lives. Using seventeen of our most crucial equations--including the Wave Equation that allowed engineers to measure a building's response to earthquakes, saving countless lives, and the Black-Scholes model, used by bankers to track the price of financial derivatives over time--Stewart illustrates that many of the advances we now take for granted were made possible by mathematical discoveries. An approachable, lively, and informative guide to the mathematical building blocks of modern life, In Pursuit of the Unknown is a penetrating exploration of how we have also used equations to make sense of, and in turn influence, our world.

Science Teaching Reconsidered

The Mathematics of Life

School maths is not the interesting part. The real fun is elsewhere. Like a magpie, Ian Stewart has collected the most enlightening, entertaining and vexing 'curiosities' of maths over the years Now, the private collection is displayed in his cabinet. There are some hidden gems of logic, geometry and probability -- like how to extract a cherry from a cocktail glass

(harder than you think), a pop up dodecahedron, the real reason why you can't divide anything by zero and some tips for making money by proving the obvious. Scattered among these are keys to unlocking the mysteries of Fermat's last theorem, the Poincar Conjecture, chaos theory, and the P/NP problem for which a million dollar prize is on offer. There are beguiling secrets about familiar names like Pythagoras or prime numbers, as well as anecdotes about great mathematicians. Pull out the drawers of the Professor's cabinet and who knows what could happen

In Pursuit of the Unknown

Biologists have long dismissed mathematics as being unable to meaningfully contribute to our understanding of living beings. Within the past ten years, however, mathematicians have proven that they hold the key to unlocking the mysteries of our world--and ourselves. In The Mathematics of Life, Ian Stewart provides a fascinating overview of the vital but little-recognized role mathematics has played in pulling back the curtain on the hidden complexities of the natural world--and how its contribution will be even more vital in the years ahead. In his characteristically clear and entertaining fashion, Stewart explains how mathematicians and biologists have come to work together on some of the most difficult scientific problems that the human race has ever tackled, including the nature and origin of life itself.

Five Equations That Changed the World

Can a Smart Person Believe in God?

While the prediction of observations is a forward problem, the use of actual observations to infer the properties of a model is an inverse problem. Inverse problems are difficult because they may not have a unique solution. The description of uncertainties plays a central role in the theory, which is based on probability theory. This book proposes a general approach that is valid for linear as well as for nonlinear problems. The philosophy is essentially probabilistic and allows the reader to understand the basic difficulties appearing in the resolution of inverse problems. The book attempts to explain how a method of acquisition of information can be applied to actual real-world problems, and many of the arguments are heuristic.

The Equation that Couldn't Be Solved

According to the great mathematician Paul Erdös, God maintains perfect mathematical proofs in The Book. This book presents the authors candidates for such "perfect proofs," those which contain brilliant ideas, clever connections, and wonderful observations, bringing new insight and surprising perspectives to problems from number theory, geometry, analysis, combinatorics, and graph theory. As a result, this book will be fun reading for anyone with an interest in mathematics.

Learning to Listen

In the early twentieth century, a massive undertaking to rid mathematics of all paradoxes and inconsistencies was underway. Known as Hilbert's program, it sought to provide an unshakable foundation for all of mathematics. Things seemed to be proceeding well until young Kurt Godel stunned

the world by proving that Hilbert's goals were unobtainable, that contradiction was part of the warp and weave of any mathematical system. Yet what at the time seemed to be a fatal blow to mathematical consistency now forms the basis of modern logic. Godel's incompleteness theorems are often misunderstood to be a statement of the limits of mathematical reasoning, but in truth they strengthen mathematics, building it up to be more powerful than what had come before. In this third book in the Math Girls series, join Miruka and friends as they tackle the basics of modern logic, learning such topics as the Peano axioms, set theory, and diagonalization, leading up to an in-depth exploration of Godel's famous theorems. Along the way, visit other interesting and important topics such as trigonometry and the epsilon-delta definition of limits, and of course take on challenges from the enigmatic Mr. Muraki. Math Girls 3: Godel's Incompleteness Theorems has something for anyone interested in mathematics, from advanced high school students to college math majors and educators."

Proving Einstein Right

"It's happening this second. Scientists are re-imagining and re-engineering the world forever. With brutal honesty and engaging story-telling, Michael Guillen gives us a clear-eyed look at a future that is already here. Consider this unsettling, brilliantly written, must-read book your official wake up call." -- ERIC METAXAS, #1 national bestselling author of Bonhoeffer: Pastor, Martyr, Prophet, Spy "Michael Guillen has tackled an important subject in The End of Life as We Know It This book is a sobering look at where we could be headed. A fascinating read." -- DAVID LIMBAUGH, bestselling author of Jesus is Risen and The True Jesus In all

aspects of life, humans are crossing lines of no return. Modern science is leading us into vast uncharted territory—far beyond the invention of nuclear weapons or taking us to the moon.Today, in labs all over the world, scientists are performing experiments that threaten to fundamentally alter the practical character and ethical color of our everyday lives. In The End of Life as We Know It: Ominous News from the Frontiers of Science, bestselling author and Emmy award winning science journalist Michael Guillen takes a penetrating look at how the scientific community is pushing the boundaries of morality, including: • Scientists who detached the head of a Russian man from his crippled, diseased body, and stitching it onto a healthy new donated body. • Fertility experiments aimed at allowing designer babies to be conceived with the DNA from three or more biological parents. • The unprecedented politicization of science – for example, in the global discussion about climate change that is pitting "deniers" against "alarmists" and inspiring Draconian legislation, censorship, and legal prosecutions. • The integration of Artificial Intelligence into communications and the economy. The End of Life as We Know It takes us into labratories and boardrooms where these troubling advances are taking place and asks the question no scientists seem to be asking: What does this mean for the future of humanity? PREVIOUS PRAISE FOR MICHAEL GUILLEN: "Guillen succeeds triumphantly…He writes with extraordinary grace and clarity." — CHRISTOPHER LEHMANN-HAUPT, The New York Times "Guillen knows how to tell a story." — Wall Street Journal "Michael Guillen is 'Winsomely brilliant.'" — ERIC METAXAS, #1 national bestselling author of Bonhoeffer: Pastor, Martyr, Prophet, Spy "Michael Guillen bridges the seeming gap between science and faith better than anyone I know." — CAL THOMAS, Syndicated and USA Today columnist/Fox News contributor

The Knowledge Machine: How Irrationality Created Modern Science

An award-winning science writer introduces us to mathematics using the extraordinary equation that unites five of mathematics' most important numbers Bertrand Russell wrote that mathematics can exalt "as surely as poetry." This is especially true of one equation: ei(pi) + 1 = 0, the brainchild of Leonhard Euler, the Mozart of mathematics. More than two centuries after Euler's death, it is still regarded as a conceptual diamond of unsurpassed beauty. Called Euler's identity or God's equation, it includes just five numbers but represents an astonishing revelation of hidden connections. It ties together everything from basic arithmetic to compound interest, the circumference of a circle, trigonometry, calculus, and even infinity. In David Stipp's hands, Euler's identity formula becomes a contemplative stroll through the glories of mathematics. The result is an ode to this magical field.

Advanced Calculus

As Christians, we are often urged to turn away from scientific discovery and rely solely on the Bible as the source of our faith. On the other hand, many people in areas such as science, law, and education insist that Christian faith is lowbrow or unintelligent. But is it possible to reconcile science with what you believe about God? As someone who has grappled with the issues of science and faith in the public eye for more than a decade as a television journalist, Dr. Michael Guillen believes it is possible. In fact, by embracing the discoveries of science we can see God, the universe, and humanity in full, multidimensional glory. Fortunately, you don't have to be a genius to enjoy this book. The bite-sized

chapters are full of fascinating scientific tidbits in an easy-to-understand format. Captivating stories of the author's childhood in the Mexican barrio of East L.A. and his work in television and research are woven throughout. There is even an entertaining SQ (Spiritual Quotient) test for readers to take.

Calculus

Is there a secret formula for getting rich? For going viral? For deciding how long to stick with your current job, Netflix series, or even relationship? This book is all about the equations that make our world go round. Ten of them, in fact. They are integral to everything from investment banking to betting companies and social media giants. And they can help you to increase your chance of success, guard against financial loss, live more healthfully, and see through scaremongering. They are known by only the privileged few - until now. With wit and clarity, mathematician David Sumpter shows that it isn't the technical details that make these formulas so successful. It is the way they allow mathematicians to view problems from a different angle - a way of seeing the world that anyone can learn. Empowering and illuminating, The Ten Equations shows how math really can change your life.

The Endurance Diet

Explains important mathematical concepts, such as probability and statistics, set theory, paradoxes, symmetries, dimensions, game theory, randomness, and irrational numbers

Math Girls 3

A Publishers Weekly best book of 1995! Dr. Michael Guillen, known to millions as the science editor of ABC's Good Morning America, tells the fascinating stories behind five mathematical equations. As a regular contributor to daytime's most popular morning news show and an instructor at Harvard University, Dr. Michael Guillen has earned the respect of millions as a clear and entertaining guide to the exhilarating world of science and mathematics. Now Dr. Guillen unravels the equations that have led to the inventions and events that characterize the modern world, one of which -- Albert Einstein's famous energy equation, E=mc2 -- enabled the creation of the nuclear bomb. Also revealed are the mathematical foundations for the moon landing, airplane travel, the electric generator -- and even life itself. Praised by Publishers Weekly as "a wholly accessible, beautifully written exploration of the potent mathematical imagination," and named a Best Nonfiction Book of 1995, the stories behind The Five Equations That Changed the World, as told by Dr. Guillen, are not only chronicles of science, but also gripping dramas of jealousy, fame, war, and discovery.

The Math Book

TheÊRacing WeightÊandÊNew Rules of Marathon and Half Marathon NutritionÊauthorÕs first diet book: advice on everything from how (and how much) to eat, sample food plans from elite endurance athletes, delicious recipes, and science-based research. With a foreword by Dr. Asker Jeukendrup, the worldÕs pre-eminent sports nutrition scientist.

Einstein's Miraculous Year

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.

Inverse Problem Theory and Methods for Model Parameter Estimation

In 2006, an eccentric Russian mathematician named Grigori Perelman solved one of the world's greatest intellectual puzzles. The Poincare conjecture is an extremely complex topological problem that had eluded the best minds for over a century. In 2000, the Clay Institute in Boston named it one of seven great unsolved mathematical problems, and promised a million dollars to anyone who could find a solution. Perelman was awarded the prize this year - and declined the money. Journalist Masha Gessen was determined to find out why. Drawing on interviews with Perelman's teachers, classmates, coaches, teammates, and colleagues in Russia and the US - and informed by her own background as a math whiz raised in Russia - she set out to uncover the nature of Perelman's astonishing abilities. In telling his story, Masha Gessen has constructed a gripping and tragic tale that sheds rare light on the unique burden of genius.

The Mathematical Writings of Évariste Galois

As we humans have expanded our horizons to see things vastly smaller, faster, larger, and farther than ever before, we have been forced to confront preconceptions born of the human experience and create wholly new ways of looking at the world around us. The theories of relativity and quantum physics were developed out of this need and have provided

us with phenomenal, mind-twisting insights into the strange and exciting reality show of our universe. Relativity and Quantum Physics For Beginners is an entertaining and accessible introduction to the bizarre concepts that fueled the scientific revolution of the 20th century and led to amazing advances in our understanding of the universe.

Five Equations That Changed the World

Through Euclid's Window Leonard Mlodinow brilliantly and delightfully leads us on a journey through five revolutions in geometry, from the Greek concept of parallel lines to the latest notions of hyperspace. Here is an altogether new, refreshing, alternative history of math revealing how simple questions anyone might ask about space -- in the living room or in some other galaxy -- have been the hidden engine of the highest achievements in science and technology. Based on Mlodinow's extensive historical research; his studies alongside colleagues such as Richard Feynman and Kip Thorne; and interviews with leading physicists and mathematicians such as Murray Gell-Mann, Edward Witten, and Brian Greene, Euclid's Window is an extraordinary blend of rigorous, authoritative investigation and accessible, good-humored storytelling that makes a stunningly original argument asserting the primacy of geometry. For those who have looked through Euclid's Window, no space, no thing, and no time will ever be quite the same.

The Knot Book

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.

Euclid's Window

Knots are familiar objects. We use them to moor our boats, to wrap our packages, to tie our shoes. Yet the mathematical theory of knots quickly leads to deep results in topology and geometry. The Knot Book is an introduction to this rich theory, starting from our familiar understanding of knots and a bit of college algebra and finishing with exciting topics of current research. The Knot Book is also about the excitement of doing mathematics. Colin Adams engages the reader with fascinating examples, superb figures, and thought-provoking ideas. He also presents the remarkable applications of knot theory to modern chemistry, biology, and physics. This is a compelling book that will comfortably escort you into the marvelous world of knot theory. Whether you are a

mathematics student, someone working in a related field, or an amateur mathematician, you will find much of interest in The Knot Book.

Five Equations That Changed the World

An authorised reissue of the long out of print classic textbook, Advanced Calculus by the late Dr Lynn Loomis and Dr Shlomo Sternberg both of Harvard University has been a revered but hard to find textbook for the advanced calculus course for decades. This book is based on an honors course in advanced calculus that the authors gave in the 1960's. The foundational material, presented in the unstarred sections of Chapters 1 through 11, was normally covered, but different applications of this basic material were stressed from year to year, and the book therefore contains more material than was covered in any one year. It can accordingly be used (with omissions) as a text for a year's course in advanced calculus, or as a text for a three-semester introduction to analysis. The prerequisites are a good grounding in the calculus of one variable from a mathematically rigorous point of view, together with some acquaintance with linear algebra. The reader should be familiar with limit and continuity type arguments and have a certain amount of mathematical sophistication. As possible introductory texts, we mention Differential and Integral Calculus by R Courant, Calculus by T Apostol, Calculus by M Spivak, and Pure Mathematics by G Hardy. The reader should also have some experience with partial derivatives. In overall plan the book divides roughly into a first half which develops the calculus (principally the differential calculus) in the setting of normed vector spaces, and a second half which deals with the calculus of differentiable manifolds.

The Ten Equations That Rule the World

Before he died at the age of twenty, shot in a mysterious early-morning duel at the end of May 1832, Evariste Galois created mathematics that changed the direction of algebra. This book contains English translations of almost all the Galois material. The translations are presented alongside a new transcription of the original French and are enhanced by three levels of commentary. An introduction explains the context of Galois' work, the various publications in which it appears, and the vagaries of his manuscripts. Then there is a chapter in which the five mathematical articles published in his lifetime are reprinted. After that come the testamentary letter and the first memoir (in which Galois expounded on the ideas that led to Galois Theory), which are the most famous of the manuscripts. These are followed by the second memoir and other lesser known manuscripts. This book makes available to a wide mathematical and historical readership some of the most exciting mathematics of the first half of the nineteenth century, presented in its original form. The primary aim is to establish a text of what Galois wrote. The details of what he did, the proper evidence of his genius, deserve to be well understood and appreciated by mathematicians as well as historians of mathematics.

Professor Stewart's Cabinet of Mathematical Curiosities

Orbital Mechanics for Engineering Students, Second Edition, provides an introduction to the basic concepts of space mechanics. These include vector kinematics in three dimensions; Newton's laws of motion and gravitation; relative motion; the vector-based solution of the classical two-body

problem; derivation of Kepler's equations; orbits in three dimensions; preliminary orbit determination; and orbital maneuvers. The book also covers relative motion and the two-impulse rendezvous problem; interplanetary mission design using patched conics; rigid-body dynamics used to characterize the attitude of a space vehicle; satellite attitude dynamics; and the characteristics and design of multi-stage launch vehicles. Each chapter begins with an outline of key concepts and concludes with problems that are based on the material covered. This text is written for undergraduates who are studying orbital mechanics for the first time and have completed courses in physics, dynamics, and mathematics, including differential equations and applied linear algebra. Graduate students, researchers, and experienced practitioners will also find useful review materials in the book. NEW: Reorganized and improved discusions of coordinate systems, new discussion on perturbations and quarternions NEW: Increased coverage of attitude dynamics, including new Matlab algorithms and examples in chapter 10 New examples and homework problems

Proofs from THE BOOK

Uncertainty is everywhere. It lurks in every consideration of the future - the weather, the economy, the sex of an unborn child - even quantities we think that we know such as populations or the transit of the planets contain the possibility of error. It's no wonder that, throughout that history, we have attempted to produce rigidly defined areas of uncertainty - we prefer the surprise party to the surprise asteroid. We began our quest to make certain an uncertain world by reading omens in livers, tea leaves, and the stars. However, over the centuries, driven by curiosity, competition, and a desire be

better gamblers, pioneering mathematicians and scientists began to reduce wild uncertainties to tame distributions of probability and statistical inferences. But, even as unknown unknowns became known unknowns, our pessimism made us believe that some problems were unsolvable and our intuition misled us. Worse, as we realized how omnipresent and varied uncertainty is, we encountered chaos, quantum mechanics, and the limitations of our predictive power. Bestselling author Professor Ian Stewart explores the history and mathematics of uncertainty. Touching on gambling, probability, statistics, financial and weather forecasts, censuses, medical studies, chaos, quantum physics, and climate, he makes one thing clear: a reasonable probability is the only certainty.

Ingenium

The science expert on Good Morning America offers an entertaining and informative survey of the five mathematical equations with the greatest impact on modern times. Reprint.

Exam Prep for: Five Equations That Changed the World ; The

The fundamental mathematical tools needed to understand machine learning include linear algebra, analytic geometry, matrix decompositions, vector calculus, optimization, probability and statistics. These topics are traditionally taught in disparate courses, making it hard for data science or computer science students, or professionals, to efficiently learn the mathematics. This self-contained textbook bridges the gap between mathematical and machine learning texts, introducing the mathematical concepts with a minimum of

prerequisites. It uses these concepts to derive four central machine learning methods: linear regression, principal component analysis, Gaussian mixture models and support vector machines. For students and others with a mathematical background, these derivations provide a starting point to machine learning texts. For those learning the mathematics for the first time, the methods help build intuition and practical experience with applying mathematical concepts. Every chapter includes worked examples and exercises to test understanding. Programming tutorials are offered on the book's web site.

Orbital Mechanics for Engineering Students

A thrilling adventure story chronicling the perilous journey of the scientists who set out to prove the theory of relativity--the results of which catapulted Albert Einstein to fame and forever changed our understanding of the universe. In 1911, a relatively unknown physicist named Albert Einstein published his preliminary theory of gravity. But it hadn't been tested. To do that, he needed a photograph of starlight as it passed the sun during a total solar eclipse. So began a nearly decade-long quest by seven determined astronomers from observatories in four countries, who traveled the world during five eclipses to capture the elusive sight. Over the years, they faced thunderstorms, the ravages of a world war, lost equipment, and local superstitions. Finally, in May of 1919, British expeditions to northern Brazil and the island of Príncipe managed to photograph the stars, confirming Einstein's theory. At its heart, this is a story of frustration, faith, and ultimate victory--and of the scientists whose efforts helped build the framework for the big bang theory, catapulted Einstein to international fame, and shook the

foundation of physics.

Bridges to Infinity

A groundbreaking introduction to vectors, matrices, and least squares for engineering applications, offering a wealth of practical examples.

The Foundations of Mathematics

"There are many textbooks available for a so-called transition course from calculus to abstract mathematics. I have taught this course several times and always find it problematic. The Foundations of Mathematics (Stewart and Tall) is a horse of a different color. The writing is excellent and there is actually some useful mathematics. I definitely like this book."--The Bulletin of Mathematics Books

The End of Life as We Know It

A Most Elegant Equation

America's baby doctor tells the inspiring story behind a half century of caring for, understanding, and championing children.

Principia Mathematica

Ingenium is medieval English vernacular for "an ingenious contrivance." In this fascinating book, physicist Mark Denny considers five such contrivancesÃ¢â¬â€?the bow and arrow, the waterwheel, the counterpoise siege engine (including the

trebuchet), the pendulum clock anchor escapement, and the centrifugal governorâ¢â,¬â€?and demonstrates how they literally changed the world. Interweaving an entertaining narrative with diagrams, equations, and drawings, Denny shares the history of each device, explains the physics behind it, and describes how it was used, how it evolved, and why it is significant in today's world. Consider the bow and arrow, which transformed warfare by allowing soldiers to attack their enemies at a safe distance. Or the waterwheel, which enabled Old World civilizations to grind grain, pump water, and power machines during a period of extreme labor shortages. Medieval warriors engaged in an early form of biological warfare by using the trebuchet to launch dead animals or plague-ridden corpses over enormous fortress walls. The pendulum clock forever enslaved modern humans to the clock by linking the accurate measure of time to the burdens of schedules, deadlines, promptness, and tardiness. And the centrifugal governor gave rise to an entire branch of modern engineering science: feedback control. Reflecting on the inventors of these ancient machines and the times in which they lived, Denny concludes with thought-provoking observations about inventors, inventiveness, genius, and innovation. Whether you dream of making a better mousetrap or launching pumpkins into the stratosphere, Ingenium will tickle your fancy.

Do Dice Play God?

Amazing Truths

Effective science teaching requires creativity, imagination, and innovation. In light of concerns about American science

literacy, scientists and educators have struggled to teach this discipline more effectively. Science Teaching Reconsidered provides undergraduate science educators with a path to understanding students, accommodating their individual differences, and helping them grasp the methods--and the wonder--of science. What impact does teaching style have? How do I plan a course curriculum? How do I make lectures, classes, and laboratories more effective? How can I tell what students are thinking? Why don't they understand? This handbook provides productive approaches to these and other questions. Written by scientists who are also educators, the handbook offers suggestions for having a greater impact in the classroom and provides resources for further research.

University Physics

A Publishers Weekly best book of 1995! Dr. Michael Guillen, known to millions as the science editor of ABC's Good Morning America, tells the fascinating stories behind five mathematical equations. As a regular contributor to daytime's most popular morning news show and an instructor at Harvard University, Dr. Michael Guillen has earned the respect of millions as a clear and entertaining guide to the exhilarating world of science and mathematics. Now Dr. Guillen unravels the equations that have led to the inventions and events that characterize the modern world, one of which -- Albert Einstein's famous energy equation, E=mc2 -- enabled the creation of the nuclear bomb. Also revealed are the mathematical foundations for the moon landing, airplane travel, the electric generator -- and even life itself. Praised by Publishers Weekly as "a wholly accessible, beautifully written exploration of the potent mathematical imagination," and named a Best Nonfiction Book of 1995, the stories behind

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