A Brief History Of Infinity The Quest To Think Unthinkable Brian Clegg

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A Brief History of Infinity Profile Books
For a thousand years, infinity has proven to be a difficult and illuminating challenge for mathematicians and theologians. It certainly is the strangest idea that humans have ever thought. Where did it come from and what is it telling us about our Universe? Can there actually be infinities? Is matter infinitely divisible into ever-smaller pieces? But infinity is also the place where things happen that don't. All manner of strange paradoxes and fantasies characterize an infinite universe. If our Universe is infinite then an infinite number of exact copies of you are, at this very moment, reading an identical sentence on an identical planet somewhere else in the Universe. Now Infinity is the darling of cutting edge research, the measuring stick used by physicists, cosmologists, and mathematicians to determine the accuracy of their theories. From the paradox of Zeno's arrow to string theory, Cambridge professor John Barrow takes us on a grand tour of this most elusive of ideas and describes with clarifying subtlety how this subject has shaped, and continues to shape, our very sense of the world in which we live. The Infinite Book is a thoroughly entertaining and completely accessible account of the biggest subject of them all–infinity.

Playing with Infinity Princeton University Press
Infinity is a concept that fascinates everyone from a seven-year-old child to a maths professor. An exploration of the most mind-boggling feature of maths and physics, this work examines amazing paradoxes and looks at many features of this fascinating concept.

`The Quest` Routledge
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Eli Maor examines the role of infinity in mathematics and
geometry and its cultural impact on the arts and sciences. He
evokes the profound intellectual impact the infinite has
exercised on the human mind, from the "horror infiniti" of the
Greeks to the works of M.C. Escher; from the ornamental
designs of the Moslems, to the sage Giordano Bruno, whose
belief in an infinite universe led to his death at the hands
of the Inquisition. But above all, the book describes the
mathematician's fascination with infinity, a fascination
mingled with puzzlement. "Maor explores the idea of infinity
in mathematics and in art and argues that this is the point of
contact between the two, best exemplified by the work of the
Dutch artist M.C. Escher, six of whose works are shown here in
beautiful color plates."--Los Angeles Times "[Eli Maor's]
enthusiasm for the topic carries the reader through a rich
panorama." Choice "Fascinating and enjoyable.... places the
ideas of infinity in a cultural context and shows how they
have been espoused and molded by mathematics."-Science.
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Naming Infinity CRC Press
There are some mathematical problems whose significance goes beyond the ordinary - like Fermat's Last Theorem or Goldbach's Conjecture - they are the enigmas which define mathematics. The Great Mathematical Problems explains why these problems exist, why they matter, what drives mathematicians to incredible lengths to solve them and where they stand in the context of mathematics and science as a whole. It contains solved problems - like the Poincar Conjecture, cracked by the eccentric genius Grigori Perelman, who refused academic honours and a million-dollar prize for his work, and ones which, like the Riemann Hypothesis, remain baffling after centuries. Stewart is the guide to this mysterious and exciting world, showing how modern mathematicians constantly rise to the challenges set by their predecessors, as the great mathematical problems of the past succumb to the new techniques and ideas of the present.

Introducing Infinity National Geographic Books
'Space is big. Really big. You just won't believe how vastly, hugely, mind-bogglingly big it is. I mean, you may think it's a long way down the street to the chemist, but that's just peanuts to space.' Douglas Adams, Hitchhiker's Guide to the Galaxy We human beings have trouble with infinity - yet infinity is a surprisingly human subject. Philosophers and mathematicians have gone mad contemplating its nature and complexity - yet it is a concept routinely used by schoolchildren. Exploring the infinite is a journey into paradox. Here is a quantity that turns arithmetic on its head, making it feasible that 1 = 0. Here is a concept that enables us to cram as many extra guests as we like into an already full hotel. Most bizarrely of all, it is quite easy to show that there must be something bigger than infinity - when it surely should be the biggest thing that could possibly be. Brian Clegg takes us on a fascinating tour of that borderland between the extremely large and the ultimate that takes us from Archimedes, counting the grains of sand that would fill the universe, to the latest theories on the physical reality of the infinite. Full of unexpected delights, whether St Augustine contemplating the nature of creation, Newton and Leibniz battling over ownership of calculus, or Cantor struggling to publicise his vision of the transfinite, infinity's fascination is in the way it brings together the everyday and the extraordinary, prosaic daily life and the esoteric. Whether your interest in infinity is mathematical, philosophical, spiritual or just plain curious, this accessible book offers a stimulating and entertaining read.

Infinity Soho Press
A NEW YORK TIMES NOTABLE BOOK The Babylonians invented it, the Greeks banned it, the Hindus worshipped it, and the Christian Church used it to fend off heretics. Today it's a timebomb ticking in the heart of astrophysics. For zero, infinity's twin, is not like other numbers. It is both nothing and everything. Zero has pitted East against West and faith against reason, and its intransigence persists in the dark core of a black hole and the brilliant flash of the Big Bang. Today, zero lies at the heart of one of the biggest scientific controversies of all time: the quest for a theory of everything. Within the concept of zero lies a philosophical and scientific history of humanity. Charles Seife's elegant and witty account takes us from Aristotle to superstring theory by way of Egyptian geometry, Kabbalism, Einstein, the Chandrasekhar limit and Stephen Hawking. Covering centuries of thought, it is a concise tour of a world of ideas, bound up in the simple notion of nothing.

The Infinity of Lists Penguin
Do something amazing and learn a new skill thanks to the Little Ways to Live a Big Life books! Birds do it, bees do it, even educated fleas do it... Not falling in love, but counting. Animals and humans have been using numbers to navigate their way through the jungle of life ever since we all evolved on this planet. But this book will help you to do something that humans have only recently understood how to do: to count to regions that no animal has ever reached. By the end of this book you'll be able to count to infinity...and beyond. On our way to infinity we'll discover how the ancient Babylonians used their bodies to count to 60 (which gave us 60 minutes in the hour), how the number zero was only discovered in the 7th century by Indian mathematicians contemplating the void, why in China going into the red meant your numbers had gone negative and why numbers might be our best language for communicating with alien life. But for millennia contemplating infinity has sent even the greatest minds into a spin. Then at the end of the nineteenth century mathematicians discovered a way to think about infinity that revealed that it is a number that we can count. Not only that. They found that there are an infinite number of infinities, some bigger than others. Just using the finite neurons in your brain and the finite pages in this book, you'll have your mind blown discovering the secret of how to count to infinity.

The Man Who Knew Infinity Simon and Schuster
Is mathematics a discovery or an invention? Do numbers truly exist? What sort of reality do formulas describe? The complexity of mathematics - its abstract rules and obscure symbols - can seem very distant from the everyday. There are those things that are real and present, it is supposed, and then there are mathematical concepts: creations of our mind, mysterious tools for those unengaged with the world. Yet, from its most remote history and deepest purpose, mathematics has served not just as a way to understand and order, but also as a foundation for the reality it describes. In this elegant book, mathematician and philosopher Paolo Zellini offers a brief cultural and intellectual history of mathematics, ranging widely from the paradoxes of ancient Greece to the sacred altars of India, from Mesopotamian calculus to our own contemporary obsession with algorithms. Masterful and illuminating, The Mathematics of the Gods and the Algorithms of Men transforms our understanding of mathematical thinking, showing that it is inextricably linked with the philosophical and the religious as well as the mundane - and, indeed, with our own very human experience of the universe.

The Infinite Springer Science & Business Media
Many mysteries of the atom have came unraveled, but one remains intractable- what Frank Close calls the "Infinity puzzle". The problem was simple to describe. Although clearly very powerful, quantum field theory was making one utterly ridiculous prediction: that certain events had an infinite probability of occurring. The Infinity Puzzle charts the birth and life of the idea, and the scientists, who realized it. Based on numerous firsthand interviews and extensive research, this book captures an era of great mystery and greater discovery. Even if the Higgs boson is never found, renormalization- the pursuit of an orderly universe- has led to one of the richest and most productive intellectual periods in human history.--[book jacket]

The Great Mathematical Problems For Dummies
Count to Infinity is John C. Wright's spectacular conclusion to the thought-provoking hard science fiction Eschaton Sequence, exploring future history and human evolution. An epic space opera finale worthy of the scope and wonder of The Eschaton Sequence: Menelaus Montrose is locked in a final battle of wits, bullets, and posthuman intelligence with Ximen del Azarchel for the fate of humanity in the far future. The alien monstrosities of Ain at long last are revealed, their hidden past laid bare, along with the reason for their brutal treatment of Man and all the species seeded throughout the galaxy. And they have still one more secret that could upend everything Montrose has fought for and lived so long to achieve. The Eschaton Sequence #1 Count to a Trillion #2 The Hermetic Millennia #3 The Judge of Ages #4 The Architect of Aeons #5 The Vindication of Man At the Publisher's request, this title is being sold without Digital Rights Management Software (DRM) applied.

Infinity and Me Basic Books
Looks at the competition between French and Russian mathematicians over the nature of infinity during the twentieth century.

The Man who Counted Infinity Kvarkadabra
Infinity is an intriguing topic, with connections to religion, philosophy, metaphysics, logic, and physics as well as mathematics. Its history goes back to ancient times, with especially important contributions from Euclid, Aristotle, Eudoxus, and Archimedes. The infinitely large (infinite) is intimately related to the infinitely small (infinitesimal). Cosmologists consider sweeping questions about whether space and time are infinite. Philosophers and mathematicians ranging from Zeno to Russell have posed numerous paradoxes about infinity and infinitesimals. Many vital areas of mathematics rest upon some version of infinity. The most obvious, and the first context in which major new techniques depended on formulating infinite processes, is calculus. But there are many others, for example Fourier analysis and fractals. In this Very Short Introduction, Ian Stewart discusses infinity in mathematics while also drawing in the various other aspects of infinity and explaining some of the major problems and insights arising from this concept. He argues that working with infinity is not just an abstract, intellectual exercise but that it is instead a concept with important practical everyday applications, and considers how mathematicians use infinity and infinitesimals to answer questions or supply techniques that do not appear to involve the infinite. ABOUT THE SERIES: The Very Short Introductions series from Oxford University Press contains hundreds of titles in almost every subject area. These pocket-sized books are the perfect way to get ahead in a new subject quickly. Our expert authors combine facts, analysis, perspective, new ideas, and enthusiasm to make interesting and challenging topics highly readable.

Everything and More: A Compact History of Infinity Robinson
A biography of the Indian mathematician Srinivasa Ramanujan. The book gives a detailed account of his upbringing in India, his mathematical achievements, and his mathematical collaboration with English mathematician G. H. Hardy. The book also reviews the life of Hardy and the academic culture of Cambridge University during the early twentieth century.

The Beginning of Infinity Harvard University Press
This book traces the first faltering steps taken in the mathematical theorisation of infinity which marks the emergence of modern mathematics. It analyses the part played by Indian mathematicians through the Kerala conduit, which is an important but neglected part of the history of mathematics. Passage to Infinity: Medieval Indian Mathematics from Kerala and its Impact begins with an examination of the social origins of the Kerala School and proceeds to discuss its mathematical genesis as well as its achievements. It presents the techniques employed by the School to derive the series expansions for sine, cosine, arctan, and so on. By using modern notation but remaining close to the methods in the original sources, it enables the reader with some knowledge of trigonometry and elementary algebra to follow the derivations. While delving into the nature of the socio-economic processes that led to the development of scientific knowledge in pre-modern India, the book also probes the validity or otherwise of the conjecture of the transmission of Kerala mathematics to Europe through the Jesuit channel. The book straddles two domains: science and social sciences. It will appeal to those interested in mathematics, statistics, medieval history, history of science and technology, links between mathematics and culture and the nature of movements of ideas across cultures.

Abstraction and Infinity Souvenir Press

A bold and all-embracing exploration of the nature and progress of knowledge from one of today's great thinkers. Throughout history, mankind has struggled to understand life's mysteries, from the mundane to the seemingly miraculous. In this important new book, David Deutsch, an award-winning pioneer in the field of quantum computation, argues that explanations have a fundamental place in the universe. They have unlimited scope and power to cause change, and the quest to improve them is the basic regulating principle not only of science but of all successful human endeavor. This stream of ever improving explanations has infinite reach, according to Deutsch: we are subject only to the laws of physics, and they impose no upper boundary to what we can eventually understand, control, and achieve. In his previous book, The Fabric of Reality, Deutsch describe the four deepest strands of existing knowledge-the theories of evolution, quantum physics, knowledge, and computation-arguing jointly they reveal a unified fabric of reality. In this new book, he applies that worldview to a wide range of issues and unsolved problems, from creativity and free will to the origin and future of the human species. Filled with startling new conclusions about human choice, optimism, scientific explanation, and the evolution of culture, The Beginning of Infinity is a groundbreaking book that will become a classic of its kind.

Count to Infinity Vintage

Popular account ranges from counting to mathematical logic and covers many concepts related to infinity: graphic representation of functions; pairings; other combinations; prime numbers; logarithms; circular functions; more. 216 illustrations.

Fragments of Infinity Henry Holt and Company

Infinity is a profoundly counter-intuitive and brain-twisting subject that has inspired some great thinkers – and provoked and shocked others. The ancient Greeks were so horrified by the implications of an endless number that they drowned the man who gave away the secret. And a German mathematician was driven mad by the repercussions of his discovery of transfinite numbers. Brian Clegg and Oliver Pugh's brilliant graphic tour of infinity features a cast of characters ranging from Archimedes and Pythagoras to al-Khwarizmi, Fibonacci, Galileo, Newton, Leibniz, Cantor, Venn, Gödel and Mandelbrot, and shows how infinity has challenged the finest minds of science and mathematics. Prepare to enter a world of paradox.

Simon and Schuster

When I looked up, I shivered. How many stars were in the sky? A million? A billion? Maybe the number was as big as infinity. I started to feel very, very small. How could I even think about something as big as infinity? Uma can't help feeling small when she peers up at the night sky. She begins to wonder about infinity. Is infinity a number that grows forever? Is it an endless racetrack? Could infinity be in an ice cream cone? Uma soon finds that the ways to think about this big idea may just be . . . infinite.

Infinity Son Penguin Global

Centuries ago, when the ancient philosopher Zeno proposed his famous paradox involving Achilles and the Tortoise, he struck at the heart of one of science's most enduring and intractable problems: How do we define the infinite? From then on, our greatest natural philosophers, logicians, mathematicians, and scientists, from Aristotle to Stephen Hawking, have been stymied-and driven-by infinity. Acclaimed Science writer Richard Morris guides us on a fascinating, literate and entertaining tour of the efforts made throughout history to make sense of the mind-bending concept of the infinite. In tracing this quest, Morris shows us how each new encounter with infinity drove the advancement of physics and mathematics. Along the way, we encounter such luminaries as Galileo and Newton, Tycho Brahe and Giordano Bruno, and the giants of modern physics: Planck, Einstein, Bohr, Feynmann, Hawking, and numerous others. Beginning with simple logical puzzles and progressing to the latest cosmological theories, Morris shows how these same infinity problems helped spawn such groundbreaking scientific developments as relativity and quantum mechanics. Though in many ways, the infinite is just as baffling today as it was in antiquity, contemporary scientists are probing ever deeper into the nature of our universe and catching fleeting glimpses of the infinite in ways the ancients could never have imagined. Ultimately, we see that hidden within the theoretical possibility of an infinite number of universes may lie the answers to some of humankind's most fundamental questions: Why is there something rather than nothing? Why are we here?

A Passage to Infinity Eamon Dolan Books

A special Deluxe Edition of Adam Silvera's groundbreaking debut featuring an introduction by Angie Thomas, New York Times bestselling author of The Hate U Give; a new final chapter, "More Happy Ending"; and an afterword about where it all began. In his twisty, heartbreaking, profoundly moving New York Times bestselling debut, Adam Silvera brings to life a charged, dangerous near-future summer in the Bronx. In the months following his father's suicide, sixteen-year-old Aaron Soto can't seem to find happiness again, despite the support of his girlfriend, Genevieve, and his overworked mom. Grief and the smile-shaped scar on his wrist won't let him forget the pain. But when Aaron meets Thomas, a new kid in the neighborhood, something starts to shift inside him. Aaron can't deny his unexpected feelings for Thomas despite the tensions their friendship has created with Genevieve and his tight-knit crew. Since Aaron can't stay away from Thomas or turn off his newfound happiness, he considers taking drastic actions. The Leteo Institute's revolutionary memory-altering procedure will straighten him out, even if it means forgetting who he truly is. Why does happiness have to be so hard?