Uncle Petros And Goldbachs Conjecture

An unlikely con man wagers wife, wealth, and sanity in pursuit of an elusive Old Master. Invited to dinner by the boorish local landowner, Martin Clay, an easily distracted philosopher, and his art-historian wife are asked to assess three dusty paintings blocking the draught from the chimney. But hiding beneath the soot is nothing less-Martin believes-than a lost work by Bruegel. So begins a hilarious trail of lies and concealments, desperate schemes and soaring hopes as Martin, betting all that he owns and much that he doesn't, embarks on a quest to prove his hunch, win his wife over, and separate the painting from its owner. In Headlong, Michael Frayn, "the master of what is seriously funny" (Anthony Burgess), offers a procession of superbly realized characters, from the country squire gone to seed to his giddy, oversexed young wife. All are burdened by human muddle and human cravings; all are searching for a moral compass as they grapple with greed, folly, and desire. And at the heart of the clamor is Breugel's vision, its dark tones warning of the real risks of temptation and obsession. With this new novel, Michael Frayn has given us entertainment of the highest order. Supremely wise and wickedly funny, Headlong elevates Frayn into the front rank of contemporary novelists.
Why narrative is essential to mathematics Circles Disturbed brings together important thinkers in mathematics, history, and philosophy to explore the relationship between

mathematics and narrative. The book's title recalls the last words of the great Greek mathematician Archimedes before he was slain by a Roman soldier—"Don't disturb my circles"—words that seem to refer to two radically different concerns: that of the practical person living in the concrete world of reality, and that of the theoretician lost in a world of abstraction. Stories and theorems are, in a sense, the natural languages of these two worlds—stories representing the way we act and interact, and theorems giving us pure thought, distilled from the hustle and bustle of reality. Yet, though the voices of stories and theorems seem totally different, they share profound connections and similarities. A book unlike any other, Circles Disturbed delves into topics such as the way in which historical and biographical narratives shape our understanding of mathematics and mathematicians, the development of "myths of origins" in mathematics, the structure and importance of mathematical dreams, the role of storytelling in the formation of mathematical intuitions, the ways mathematics helps us organize the way we think about narrative structure, and much more. In addition to the editors, the contributors are Amir Alexander, David Corfield, Peter Galison, Timothy Gowers, Michael Harris, David Herman, Federica La Nave, G.E.R. Lloyd, Uri Margolin, Colin McLarty, Jan Christoph Meister, Arkady Plotnitsky, and Bernard Teissier.

In the tradition of Fermat's Last Theorem and Einstein's Dreams, a novel about mathematical obsession. Petros Papachristos devotes the early part of his life trying to prove one of the greatest mathematical challenges of all time: Goldbach's Conjecture,

the deceptively simple claim that every even number greater than two is the sum of two primes. Against a tableau of famous historical figures-among them G.H. Hardy, the self-taught Indian genius Srinivasa Ramanujan, and a young Kurt Godel-Petros works furiously to prove the notoriously difficult conjecture. Decades later, his ambitious young nephew drives the defeated mathematician back into the hunt to prove Goldbach's Conjecture. . . but at the cost of the old man's sanity, and perhaps even his life.

This is a book about prime numbers, congruences, secret messages, and elliptic curves that you can read cover to cover. It grew out of undergr- uate courses that the author taught at Harvard, UC San Diego, and the University of Washington. The systematic study of number theory was initiated around 300B. C. when Euclid proved that there are in?nitely many prime numbers, and also cleverly deduced the fundamental theorem of arithmetic, which asserts that every positive integer factors uniquely as a product of primes. Over a thousand years later (around 972A. D.) Arab mathematicians formulated the congruent number problem that asks for a way to decide whether or not a given positive integer n is the area of a right triangle, all three of whose sides are rational numbers. Then another thousand years later (in 1976), Di?e and Hellman introduced the ?rst ever public-key cryptosystem, which enabled two people to communicate secretely over a public communications channel with no predetermined secret; this invention and the ones that followed it revolutionized the world of digital communication. In the 1980s and 1990s, elliptic curves revolutionized number theory,

providing striking new insights into the congruent number problem, primality testing, publ- key cryptography, attacks on public-key systems, and playing a central role in Andrew Wiles' resolution of Fermat's Last Theorem.

'What is a self and how can a self come out of inanimate matter?' This is the riddle that drove Douglas Hofstadter to write this extraordinary book. In order to impart his original and personal view on the core mystery of human existence - our intangible sensation of 'I'-ness - Hofstadter defines the playful yet seemingly paradoxical notion of 'strange loop', and explicates this idea using analogies from many disciplines.

The world of computation according to Turing, an interactive tutoring program, as told to star-crossed lovers: a novel. Our hero is Turing, an interactive tutoring program and namesake (or virtual emanation?) of Alan Turing, World War II code breaker and father of computer science. In this unusual novel, Turing's idiosyncratic version of intellectual history from a computational point of view unfolds in tandem with the story of a love affair involving Ethel, a successful computer executive, Alexandros, a melancholy archaeologist, and Ian, a charismatic hacker. After Ethel (who shares her first name with Alan Turing's mother) abandons Alexandros following a sundrenched idyll on Corfu, Turing appears on Alexandros's computer screen to unfurl a tutorial on the history of ideas. He begins with the philosopher-mathematicians of ancient Greece—"discourse, dialogue, argument, proof... can only thrive in an egalitarian society"—and the Arab scholar in ninth-century Baghdad who invented algorithms; he

moves on to many other topics, including cryptography and artificial intelligence, even economics and developmental biology. (These lessons are later critiqued amusingly and developed further in postings by a fictional newsgroup in the book's afterword.) As Turing's lectures progress, the lives of Alexandros, Ethel, and Ian converge in dramatic fashion, and the story takes us from Corfu to Hong Kong, from Athens to San Francisco—and of course to the Internet, the disruptive technological and social force that emerges as the main locale and protagonist of the novel. Alternately pedagogical and romantic, Turing (A Novel about Computation) should appeal both to students and professionals who want a clear and entertaining account of the development of computation and to the general reader who enjoys novels of ideas.
Why is math so hard? And why, despite this difficulty, are some people so good at it? If there's some inborn capacity for mathematical thinking—which there must be, otherwise no one could do it —why can't we all do it well? Keith Devlin has answers to all these difficult questions, and in giving them shows us how mathematical ability evolved, why it's a part of language ability, and how we can make better use of this innate talent.He also offers a breathtakingly new theory of language development—that language evolved in two stages, and its main purpose was not communication—to show that the ability to think mathematically arose out of the same symbol-manipulating ability that was so crucial to the emergence of true language. Why, then, can't we do math as well as we can speak? The answer, says Devlin, is that we can and do—we just don't

recognize when we're using mathematical reasoning.

In August 1859 Bernhard Riemann, a little-known 32-year old mathematician, presented a paper to the Berlin Academy titled: "On the Number of Prime Numbers Less Than a Given Quantity." In the middle of that paper, Riemann made an incidental remark â€" a guess, a hypothesis. What he tossed out to the assembled mathematicians that day has proven to be almost cruelly compelling to countless scholars in the ensuing years. Today, after 150 years of careful research and exhaustive study, the question remains. Is the hypothesis true or false? Riemann's basic inquiry, the primary topic of his paper, concerned a straightforward but nevertheless important matter of arithmetic â€" defining a precise formula to track and identify the occurrence of prime numbers. But it is that incidental remark â€" the Riemann Hypothesis â€" that is the truly astonishing legacy of his 1859 paper. Because Riemann was able to see beyond the pattern of the primes to discern traces of something mysterious and mathematically elegant shrouded in the shadows â€" subtle variations in the distribution of those prime numbers. Brilliant for its clarity, astounding for its potential consequences, the Hypothesis took on enormous importance in mathematics. Indeed, the successful solution to this puzzle would herald a revolution in prime number theory. Proving or disproving it became the greatest challenge of the age. It has become clear that the Riemann Hypothesis, whose resolution seems to hang tantalizingly just beyond our grasp, holds the key to a variety of scientific and

mathematical investigations. The making and breaking of modern codes, which depend on the properties of the prime numbers, have roots in the Hypothesis. In a series of extraordinary developments during the 1970s, it emerged that even the physics of the atomic nucleus is connected in ways not yet fully understood to this strange conundrum. Hunting down the solution to the Riemann Hypothesis has become an obsession for many â€" the veritable "great white whale" of mathematical research. Yet despite determined efforts by generations of mathematicians, the Riemann Hypothesis defies resolution. Alternating passages of extraordinarily lucid mathematical exposition with chapters of elegantly composed biography and history, Prime Obsession is a fascinating and fluent account of an epic mathematical mystery that continues to challenge and excite the world. Posited a century and a half ago, the Riemann Hypothesis is an intellectual feast for the cognoscenti and the curious alike. Not just a story of numbers and calculations, Prime Obsession is the engrossing tale of a relentless hunt for an elusive proof â€" and those who have been consumed by it. While taking a class on infinity at Stanford in the late 1980s, Ravi Kapoor discovers that he is confronting the same mathematical and philosophical dilemmas that his mathematician grandfather had faced many decades earlier--and that had landed him in jail. Charged under an obscure blasphemy law in a small New Jersey town in 1919, Vijay Sahni is challenged by a skeptical judge to defend his belief that the certainty of mathematics can be extended to all human knowledge--including religion. Together, the

two men discover the power--and the fallibility--of what has long been considered the pinnacle of human certainty, Euclidean geometry. As grandfather and grandson struggle with the question of whether there can ever be absolute certainty in mathematics or life, they are forced to reconsider their fundamental beliefs and choices. Their stories hinge on their explorations of parallel developments in the study of geometry and infinity--and the mathematics throughout is as rigorous and fascinating as the narrative and characters are compelling and complex. Moving and enlightening, A Certain Ambiguity is a story about what it means to face the extent--and the limits--of human knowledge.

A twenty-first-century scientist sacrifices her family life to decipher the strange signals coming from interstellar space, messages that show her how to build an extraordinary machine that allows one to travel via the mind. Reprint.

A meditation on the beauty and meaning of numbers, exploring mathematical equations, describing some of the mathematical discoveries of the past millennia, and pondering philosophical questions about the relation of numbers to the universe.

Onkel Petros' nevø fortæller kærligt den bittersøde historie om onkelens livslange, passionerede arbejde med at føre bevis for matematikeren Goldbachs formodning, at ethvert lige tal er summen af to primtal

This collection presents significant contributions from an international network project on mathematical cultures, including essays from leading scholars in the history and

philosophy of mathematics and mathematics education.? Mathematics has universal standards of validity. Nevertheless, there are local styles in mathematical research and teaching, and great variation in the place of mathematics in the larger cultures that mathematical practitioners belong to. The reflections on mathematical cultures collected in this book are of interest to mathematicians, philosophers, historians, sociologists, cognitive scientists and mathematics educators.

This excellent book, written by the established author David Acheson, makes mathematics accessible to everyone. Providing an entertaining and witty overview of the subject, the text includes several fascinating puzzles, and is accompanied by numerous illustrations and sketches by world famouscartoonists. This unusual book is one of the most readable explanations of mathematics available.

A hugely enjoyable, brilliantly researched explanation of the basic principles of maths. Examines a letter written by Blaise Pascal to Pierre de Fermat in 1654 that speaks of probability and numerical values that have had an impact on the modern world with regard to calculating insurance rates, the housing markets, and car safety.

The primacy of words over images has deep roots in Western culture. But what if the two are inextricably linked in meaning-making? In this experiment in visual thinking, drawn in comics, Nick Sousanis defies conventional discourse to offer readers a stunning work of graphic art and a serious inquiry into the ways humans construct knowledge.

Cunning, fantastical tales about a Greek village of the imagination, from a startling new talent Panos Karnezis' remarkable stories are all set in the same nameless Greek village. His characters are the people who live there--the priest, the whore, the doctor, the seamstress, the mayor--and the occasional animal: a centaur, a parrot that recites Homer, a horse called History. Their lives intersect, as lives do in a small place, and they know each other's secrets: the hidden crimes, the mysteries, the little infamies that men commit. Karnezis observes his villagers with a worldly eye, and creates a place where magic invariably loses out to harsh reality, a place full of passion, cruelty, and deep reserves of black humor. These stories recall the masters of the form--the wit and sophisticated playfulness of Saki and the primal fatalism of Prosper Merimee--but they are utterly original and prove that Karnezis is one of the freshest new voices in English fiction.

A rewarding philosophical essay on memory, language, love, and the passage of time, from a Greek immigrant who became one of Sweden's most highly respected writers "Nobody should write after the age of seventy-five," a friend had said. At seventy-seven, struggling with the weight of writer's block, Theodor Kallifatides makes the difficult decision to sell the Stockholm studio where he diligently worked for decades and retire. Unable to write, and yet unable to not write, he travels to his native Greece in the hope of rediscovering that lost fluidity of language. In this slim memoir, Kallifatides explores the interplay of meaningful living and meaningful work, and the

timeless question of how to reconcile oneself to aging. But he also comments on worrying trends in contemporary Europe—from religious intolerance and prejudice against immigrants to housing crises and gentrification—and his sadness at the battered state of his beloved Greece. Kallifatides offers an eloquent, thought-provoking meditation on the writing life, and an author's place in a changing world.

This is a look at the principles of art history. Working from the thesis that modernity is the culture that invented what art is, the author by means of the pictorial essay offers a cultural critique of the contemporary circumstances that have influenced our notions of what art actually is, how we attempt to value it, how we have come to make a business of it. Like film, photography and other forms of mass culture, the author studies how popular taste influences the aesthetic criteria that determine its worth.

'Saunders is an astoundingly tuned voice - graceful, dark, authentic and funny - telling just the kind of stories we need to get us through these times' Thomas Pynchon In PASTORALIA elements of contemporary life are twisted, merged and amplified into a slightly skewed version of modern America. A couple live and work in a caveman theme-park, where speaking is an instantly punishable offence. A born loser attends a self-help seminar where he is encouraged to rid himself of all the people who are 'crapping in your oatmeal'. And a male exotic dancer and his family are terrorised by their decomposing aunt who visits them with a solemn message from beyond the grave. With an uncanny combination of deadpan naturalism and uproarious humour, George

Saunders creates a world that is both indelibly original and yet hauntingly familiar ... Argues that geometry is fundamental to string theory--which posits that we live in a 10-dimensional existence--as well as the very nature of the universe, and explains where mathematics will take string theory next.

Kevin is a young man without a soul, holidaying in Tokyo; Mr Five, the enigmatic kappa, is the man he so happens to meet. Little does Kevin know that kappas—the river demons of Japanese folklore—desire nothing more than the souls of other humans. Set between Singapore and Japan, Kappa Quartet is split into eight discrete sections, tracing the rippling effects of this chance encounter across a host of other characters, connected and bound to one another in ways both strange and serendipitous. Together they ask one another: what does it mean to be in possession of something nobody has seen before?

After his friend Stefanos Kantartzis is found murdered in 1929 Athens, Michael Igerinos investigates whether the solution of a mathematical problem drove someone to commit the dirty deed. Reprint.

Thirteen-year-old Lucky Linderhoff offers a candid account of how she was seduced by her mother's husband, Roger Fishbite, at the age of eleven, during a hectic odyssey of motels, in a arresting new novel by the author of Clea and Zeus Divorce. 15,000 first printing.

Brilliant, dazzling, never-before-collected nonfiction writings by "one of America's most daring and talented writers." (Los Angeles Times Book Review). Both Flesh and Not gathers fifteen of Wallace's seminal essays, all published in book form for the first time. Never has Wallace's

seemingly endless curiosity been more evident than in this compilation of work spanning nearly 20 years of writing. Here, Wallace turns his critical eye with equal enthusiasm toward Roger Federer and Jorge Luis Borges; Terminator 2 and The Best of the Prose Poem; the nature of being a fiction writer and the quandary of defining the essay; the best underappreciated novels and the English language's most irksome misused words; and much more. Both Flesh and Not restores Wallace's essays as originally written, and it includes a selection from his personal vocabulary list, an assembly of unusual words and definitions.

Is reality logical and is logic real? What is the origin of logical intuitions? What is the role of logical structures in the operations of an intelligent mind and in communication? Is the function of logical structure regulative or constitutive or both in concept formation? This volume provides analyses of the logic-reality relationship from different approaches and perspectives. The point of convergence lies in the exploration of the connections between reality – social, natural or ideal – and logical structures employed in describing or discovering it. Moreover, the book connects logical theory with more concrete issues of rationality, normativity and understanding, thus pointing to a wide range of potential applications. The papers collected in this volume address cutting-edge topics in contemporary discussions amongst specialists. Some essays focus on the role of indispensability considerations in the justification of logical competence, and the wide range of challenges within the philosophy of mathematics. Others present advances in dynamic logical analysis such as extension of game semantics to non-logical part of vocabulary and development of models of contractive speech act.

When a mediocre mathematician solves a puzzle that has vexed savants for centuries, his moment of glory is spoiled by accusations that the solution did not originate with him. Original.

"One of the best critiques of current mathematics education I have ever seen."—Keith Devlin, math columnist on NPR's Morning Edition A brilliant research mathematician who has devoted his career to teaching kids reveals math to be creative and beautiful and rejects standard anxiety-producing teaching methods. Witty and accessible, Paul Lockhart's controversial approach will provoke spirited debate among educators and parents alike and it will alter the way we think about math forever. Paul Lockhart, has taught mathematics at Brown University and UC Santa Cruz. Since 2000, he has dedicated himself to K-12 level students at St. Ann's School in Brooklyn, New York.

Based on the remarkable true story of G. H. Hardy and Srinivasa Ramanujan, and populated with such luminaries such as D. H. Lawrence, Bertrand Russell, and Ludwig Wittgenstein, The Indian Clerk takes this extraordinary slice of history and transforms it into an emotional and spellbinding story about the fragility of human connection and our need to find order in the world. A literary masterpiece, it appeared on four bestseller lists, including the Los Angeles Times, and received dazzling reviews from every major publication in the country.

Three brothers. One mafia curse. A gripping mafia thriller, at once a suspenseful crime adventure and ingenious fable Ben Frank has blood on his hands. He knows that he has killed a man in a bar-room brawl. He knows that as an Italian immigrant in turn-of-the-century New York, life is tough. But what he doesn't know is that the victim's father, a Mafia boss, will settle a curse, a 'maledizione', on Frank's family; that the shoemaker's three sons will each die in their forty-second year. Following the varying fortunes of the shoemaker's sons – Al, Nick and Leo Frank – as well as their nemesis, a gangster by the name of 'Terranova', Three Little Pigs grows into a dazzling meditation on chance, destiny, choice and their consequences. At once a

gripping thriller and an investigation of character and fate, this is a revenge tragedy written by a master at the very peak of his powers. Can the brothers beat the curse? From Apostolos Doxiadis, author of Logicomix, comes a unique and completely absorbing crime novel, sure to appeal to fans of Mario Puzo, Don DeLillo and Carl Hiaasen. 'Brilliantly entertaining and suspenseful – imagine the Brothers Grimm crossed with Guys and Dolls.' Bestselling author Tom Holland

Mr. Ruche, a Parisian bookseller, receives a bequest from a long lost friend in the Amazon of a vast library of math books, which propels him into a great exploration of the story of mathematics. Meanwhile Max, whose family lives with Mr. Ruche, takes in a voluble parrot who will discuss math with anyone. When Mr. Ruche learns of his friend's mysterious death in a Brazilian rainforest, he decides that with the parrot's help he will use these books to teach Max and his brother and sister the mysteries of Euclid's Elements, Pythagoras's Theorem and the countless other mathematical wonders. But soon it becomes clear that Mr. Ruche has inherited the library for reasons other than enlightenment, and before he knows it the household is racing to prevent the parrot and vital, new theorems from falling into the wrong hands. An immediate bestseller when first published in France, The Parrot's Theorem charmingly combines a straightforward history of mathematics and a first-rate murder mystery.

Uncle Petros is a family joke. An ageing recluse, he lives alone in a suburb of Athens, playing chess and tending to his garden. If you didn't know better, you'd surely think he was one of life's failures. But his young nephew suspects otherwise. For Uncle Petros, he discovers, was once a celebrated mathematician, brilliant and foolhardy enough to stake everything on solving a problem that had defied all attempts at proof for nearly three centuries - Goldbach's

Conjecture. His quest brings him into contact with some of the century's greatest mathematicians, including the Indian prodigy Ramanujan and the young Alan Turing. But his struggle is lonely and single-minded, and by the end it has apparently destroyed his life. Until that is a final encounter with his nephew opens up to Petros, once more, the deep mysterious beauty of mathematics. Uncle Petros and Goldbach's Conjecture is an inspiring novel of intellectual adventure, proud genius, the exhilaration of pure mathematics - and the rivalry and antagonism which torment those who pursue impossible goals.

How can you tell whether a number is prime? What if the number has hundreds or thousands of digits? This question may seem abstract or irrelevant, but in fact, primality tests are performed every time we make a secure online transaction. In 2002, Agrawal, Kayal, and Saxena answered a long-standing open question in this context by presenting a deterministic test (the AKS algorithm) with polynomial running time that checks whether a number is prime or not. What is more, their methods are essentially elementary, providing us with a unique opportunity to give a complete explanation of a current mathematical breakthrough to a wide audience. Rempe-Gillen and Waldecker introduce the aspects of number theory, algorithm theory, and cryptography that are relevant for the AKS algorithm and explain in detail why and how this test works. This book is specifically designed to make the reader familiar with the background that is necessary to appreciate the AKS algorithm and begins at a level that is suitable for secondary school students, teachers, and interested amateurs. Throughout the book, the reader becomes involved in the topic by means of numerous exercises.

'Brilliant and fascinating. No one is better at making the recondite accessible and exciting' Bill Bryson Britain's most famous mathematician takes us to the edge of knowledge to show us

what we cannot know. Is the universe infinite? Do we know what happened before the Big Bang? Where is human consciousness located in the brain? And are there more undiscovered particles out there, beyond the Higgs boson? In the modern world, science is king: weekly headlines proclaim the latest scientific breakthroughs and numerous mathematical problems, once indecipherable, have now been solved. But are there limits to what we can discover about our physical universe? In this very personal journey to the edges of knowledge, Marcus du Sautoy investigates how leading experts in fields from quantum physics and cosmology, to sensory perception and neuroscience, have articulated the current lie of the land. In doing so, he travels to the very boundaries of understanding, questioning contradictory stories and consulting cutting edge data. Is it possible that we will one day know everything? Or are there fields of research that will always lie beyond the bounds of human comprehension? And if so, how do we cope with living in a universe where there are things that will forever transcend our understanding? In What We Cannot Know, Marcus du Sautoy leads us on a thought-provoking expedition to the furthest reaches of modern science. Prepare to be taken to the edge of knowledge to find out if there's anything we truly cannot know.

The biography of a mathematical genius. Paul Erdos was the most prolific pure mathematician in history and, arguably, the strangest too. 'A mathematical genius of the first order, Paul Erdos was totally obsessed with his subject -- he thought and wrote mathematics for nineteen hours a day until he died. He travelled constantly, living out of a plastic bag and had no interest in food, sex, companionship, art -- all that is usually indispensible to a human life. Paul Hoffman, in this marvellous biography, gives us a vivid and strangely moving portrait of this singular creature, one that brings out not only Erdos's genius and his oddness, but his warmth and sense of fun,

the joyfulness of his strange life.' Oliver Sacks For six decades Erdos had no job, no hobbies, no wife, no home; he never learnt to cook, do laundry, drive a car and died a virgin. Instead he travelled the world with his mother in tow, arriving at the doorstep of esteemed mathematicians declaring 'My brain is open'. He travelled until his death at 83, racing across four continents to prove as many theorems as possible, fuelled by a diet of espresso and amphetamines. With more than 1,500 papers written or co-written,

In this critically acclaimed international bestseller, Petros Papachristos, a mathematical prodigy, has devoted much of his life trying to prove one of the greatest mathematical challenges of all time: Goldbach's Conjecture, the deceptively simple claim that every even number greater than two is the sum of two primes. His feverish and singular pursuit of this goal has come to define his life. Now an old man, he is looked on with suspicion and shame by his family-until his ambitious young nephew intervenes. Seeking to understand his uncle's mysterious mind, the narrator of this novel unravels his story, a dramatic tale set against a tableau of brilliant historical figures-among them G. H. Hardy, the self-taught Indian genius Srinivasa Ramanujan, and a young Kurt Gödel. Meanwhile, as Petros recounts his own life's work, a bond is formed between uncle and nephew, pulling each one deeper into mathematical obsession, and risking both of their sanity.

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