Alexandre Grothendieck A Mathematical Portrait English And French Edition

Handbook of Teichmüller TheoryThe Mathematician's BrainTool and ObjectTopology and GroupoidsAlgebraic GeometryThe K-bookPrime SuspectsThe Joy of xMathematiciansFundamental Algebraic GeometryDerived CategoriesIntroduction to Grothendieck Duality TheoryLectures on Algebraic TopologyUnknown QuantityJohn Von NeumannThe Grothendieck Festschrift, Volume IMathematics without ApologiesAn Invitation to Applied Category TheoryThe Heart of CohomologyDeformations of Algebraic SchemesColonel LágrimasTopoiZeta and L-Functions of Varieties and MotivesMath on TrialGenius At PlayThe Big QuestionsLoving and Hating MathematicsRepresentation TheoryMathematics and Theoretical PhysicsWhen Einstein Walked with GödelThe Artist and the MathematicianLove and MathAlexandre GrothendieckDefying HitlerMathematics without ApologiesGrothendieck-Serre CorrespondenceGeometric Galois Actions: Volume 2, The Inverse Galois Problem, Moduli Spaces and Mapping Class GroupsThe Grasshopper KingFormal Geometry and Bordism OperationsProceedings Of The International Congress Of Mathematicians 2018 (Icm 2018) (In 4 Volumes)

Handbook of Teichmüller Theory

The Mathematician's Brain

An awesome, globe-spanning, and New York Times best-selling journey through the beauty and power of mathematics What if you had to take an art class in which you were only taught how to paint a fence? What if you were never shown the paintings of van Gogh and Picasso, weren't even told they existed? Alas, this is how math is taught, and so for most of us it becomes the intellectual equivalent of watching paint dry. In Love and Math, renowned mathematician Edward Frenkel reveals a side of math we've never seen, suffused with all the beauty and elegance of a work of art. In this heartfelt and passionate book, Frenkel shows that mathematics, far from occupying a specialist niche, goes to the heart of all matter, uniting us across cultures, time, and space. Love and Math tells two intertwined stories: of the wonders of mathematics and of one young man's journey learning and living it. Having braved a discriminatory educational system to become one of the twenty-first century's leading mathematicians, Frenkel now works on one of the biggest ideas to come out of math in the last 50 years: the Langlands Program. Considered by many to be a Grand Unified Theory of mathematics, the Langlands Program enables researchers to translate findings from one field to another so that they can solve problems, such as Fermat's last theorem, that had seemed intractable before. At its core, Love and Math is a story about accessing a new way of thinking, which can enrich our lives and empower us to better understand the world and our place in it. It is an invitation

to discover the magic hidden universe of mathematics.

Tool and Object

Winner of the 2017 JPBM Communications Award for Expository and Popular Books. "A delightful meta-biography--playful indeed--of a brilliant iconoclast." --James Gleick, author of The Information John Horton Conway is a singular mathematician with a lovely loopy brain. He is Archimedes, Mick Jagger, Salvador Dali, and Richard Feynman all rolled into one--he boasts a rock star's charisma, a slyly bent sense of humor, a polymath's promiscuous curiosity, and an insatiable compulsion to explain everything about the world to everyone in it. At Cambridge, Conway wrestled with "Monstrous Moonshine," discovered the aptly named surreal numbers, and invented the cult classic Game of Life--more than just a cool fad, Life demonstrates how simplicity generates complexity and provides an analogy for mathematics and the entire universe. As a "mathemagician" at Princeton, he used ropes, dice, pennies, coat hangers, even the occasional Slinky, as props to extend his winning imagination and share his many nerdish delights. He granted Roberts full access to his idiosyncrasies and intellect both, though not without the occasional grumble: "Oh hell," he'd say. "You're not going to put that in the book. Are you?!?"

Topology and Groupoids

Annotation. The book is intended as a text for a two-semester course in topology and algebraic topology at the advanced undergraduate orbeginning graduate level. There are over 500 exercises, 114 figures, numerous diagrams. The general direction of the book is towardhomotopy theory with a geometric point of view. This book would providea more than adequate background for a standard algebraic topology coursethat begins with homology theory. For more information seewww.bangor.ac.uk/r.brown/topgpds.htmlThis version dated April 19, 2006, has a number of corrections made.

Algebraic Geometry

From Jim Holt, the New York Times bestselling author of Why Does the World Exist?, comes an entertaining and accessible guide to the most profound scientific and mathematical ideas of recent centuries in When Einstein Walked with Gödel: Excursions to the Edge of Thought. Does time exist? What is infinity? Why do mirrors reverse left and right but not up and down? In this scintillating collection, Holt explores the human mind, the cosmos, and the thinkers who've tried to encompass the latter with the former. With his trademark clarity and humor, Holt probes the mysteries of quantum mechanics, the quest for the foundations of mathematics, and the nature of logic and truth. Along the way, he offers intimate biographical sketches of celebrated and neglected thinkers, from the physicist Emmy Noether to the computing

pioneer Alan Turing and the discoverer of fractals, Benoit Mandelbrot. Holt offers a painless and playful introduction to many of our most beautiful but least understood ideas, from Einsteinian relativity to string theory, and also invites us to consider why the greatest logician of the twentieth century believed the U.S. Constitution contained a terrible contradiction—and whether the universe truly has a future.

The K-book

Provides an explanation of what made Alexandre Grothendieck the mathematician that he was. Thirteen articles written by people who knew him personally - some who even studied or collaborated with him over a period of many years - portray Grothendieck at work, explaining the nature of his thought through descriptions of his discoveries and contributions to various subjects, and with impressions, memories, anecdotes, and some biographical elements.

Prime Suspects

An introduction to abstract algebraic geometry, with the only prerequisites being results from commutative algebra, which are stated as needed, and some elementary topology. More than 400 exercises distributed throughout the book offer specific examples as well as more specialised topics not treated in the main text, while three appendices present brief accounts of some areas of current research. This book can thus be used as textbook for an introductory course in algebraic geometry following a basic graduate course in algebra. Robin Hartshorne studied algebraic geometry with Oscar Zariski and David Mumford at Harvard, and with J.-P. Serre and A. Grothendieck in Paris. He is the author of "Residues and Duality", "Foundations of Projective Geometry", "Ample Subvarieties of Algebraic Varieties", and numerous research titles.

The Joy of x

The series is aimed specifically at publishing peer reviewed reviews and contributions presented at workshops and conferences. Each volume is associated with a particular conference, symposium or workshop. These events cover various topics within pure and applied mathematics and provide up-to-date coverage of new developments, methods and applications.

Mathematicians

This book surveys progress in the domains described in the hitherto unpublished manuscript "Esquisse d'un Programme" (Sketch of a Program) by Alexander Grothendieck. It will be of wide interest amongst workers in algebraic geometry,

number theory, algebra and topology.

Fundamental Algebraic Geometry

The amount of mathematics invented for number-theoretic reasons is impressive. It includes much of complex analysis, the re-foundation of algebraic geometry on commutative algebra, group cohomology, homological algebra, and the theory of motives. Zeta and L-functions sit at the meeting point of all these theories and have played a profound role in shaping the evolution of number theory. This book presents a big picture of zeta and L-functions and the complex theories surrounding them, combining standard material with results and perspectives that are not made explicit elsewhere in the literature. Particular attention is paid to the development of the ideas surrounding zeta and L-functions, using quotes from original sources and comments throughout the book, pointing the reader towards the relevant history. Based on an advanced course given at Jussieu in 2013, it is an ideal introduction for graduate students and researchers to this fascinating story.

Derived Categories

Defying Hitler was written in 1939 and focuses on the year 1933, when, as Hitler assumed power, its author was a 25-year-old German law student, in training to join the German courts as a junior administrator. His book tries to answer two questions people have been asking since the end of World War II: "How were the Nazis possible?" and "Why did no one stop them?" Sebastian Haffner's vivid first-person account, written in real time and only much later discovered by his son, makes the rise of the Nazis psychologically comprehensible. "An astonishing memoir [a] masterpiece." — Gabriel Schoenfeld, The New York Times Book Review "A short, stabbing, brilliant book It is important, first, as evidence of what one intelligent German knew in the 1930s about the unspeakable nature of Nazism, at a time when the overwhelming majority of his countrymen claim to have know nothing at all. And, second, for its rare capacity to reawaken anger about those who made the Nazis possible." — Max Hastings, The Sunday Telegraph "Defying Hitler communicates one of the most profound and absolute feelings of exile that any writer has gotten between covers." — Charles Taylor, Salon "Sebastian Haffner was Germany's political conscience, but it is only now that we can read how he experienced the Nazi terror himself — that is a memoir of frightening relevance today." — Heinrich Jaenicke, Stern "The prophetic insights of a fairly young man help us understand the plight, as Haffner refers to it, of the non-Nazi German." — The Denver Post "Sebastian Haffner's Defying Hitler is a most brilliant and imaginative book — one of the most important books we have ever published." — Lord Weidenfeld

Introduction to Grothendieck Duality Theory

"Delightful . . . easily digestible chapters include plenty of helpful examples and illustrations. You'll never forget the Pythagorean theorem again!"—Scientific American Many people take math in high school and promptly forget much of it. But math plays a part in all of our lives all of the time, whether we know it or not. In The Joy of x, Steven Strogatz expands on his hit New York Times series to explain the big ideas of math gently and clearly, with wit, insight, and brilliant illustrations. Whether he is illuminating how often you should flip your mattress to get the maximum lifespan from it, explaining just how Google searches the internet, or determining how many people you should date before settling down, Strogatz shows how math connects to every aspect of life. Discussing pop culture, medicine, law, philosophy, art, and business, Strogatz is the math teacher you wish you'd had. Whether you aced integral calculus or aren't sure what an integer is, you'll find profound wisdom and persistent delight in The Joy of x.

Lectures on Algebraic Topology

Unknown Quantity

Category theory is unmatched in its ability to organize and layer abstractions and to find commonalities between structures of all sorts. No longer the exclusive preserve of pure mathematicians, it is now proving itself to be a powerful tool in science, informatics, and industry. By facilitating communication between communities and building rigorous bridges between disparate worlds, applied category theory has the potential to be a major organizing force. This book offers a self-contained tour of applied category theory. Each chapter follows a single thread motivated by a real-world application and discussed with category-theoretic tools. We see data migration as an adjoint functor, electrical circuits in terms of monoidal categories and operads, and collaborative design via enriched profunctors. All the relevant category theory, from simple to sophisticated, is introduced in an accessible way with many examples and exercises, making this an ideal guide even for those without experience of university-level mathematics.

John Von Neumann

The book is a bilingual (French and English) edition of the mathematical correspondence between A. Grothendieck and J-P. Serre. The original French text of 84 letters is supplemented here by the English translation, with French text printed on the left-hand pages and the corresponding English text printed on the right-hand pages. The book also includes several facsimiles of original letters. The letters presented in the book were mainly written between 1955 and 1965. During this period, algebraic geometry went through a remarkable transformation, and Grothendieck and Serre were among central figures in this process. The reader can follow the creation of some of the most important notions of modern mathematics,

like sheaf cohomology, schemes, Riemann-Roch type theorems, algebraic fundamental group, motives. The letters also reflect the mathematical and political atmosphere of this period (Bourbaki, Paris, Harvard, Princeton, war in Algeria, etc.). Also included are a few letters written between 1984 and 1987. The letters are supplemented by J-P. Serre's notes, which give explanations, corrections, and references further results. The book should be useful to specialists in algebraic geometry, in history of mathematics, and to all mathematicians who want to understand how great mathematics is created.

The Grothendieck Festschrift, Volume I

This three-volume work contains articles collected on the occasion of Alexander Grothendieck's sixtieth birthday and originally published in 1990. The articles were offered as a tribute to one of the world's greatest living mathematicians. Many of the groundbreaking contributions in these volumes contain material that is now considered foundational to the subject. Topics addressed by these top-notch contributors match the breadth of Grothendieck's own interests, including: functional analysis, algebraic geometry, algebraic topology, number theory, representation theory, K-theory, category theory, and homological algebra.

Mathematics without Apologies

Alexander Grothendieck introduced many concepts into algebraic geometry; they turned out to be astoundingly powerful and productive and truly revolutionized the subject. Grothendieck sketched his new theories in a series of talks at the Seminaire Bourbaki between 1957 and 1962 and collected his write-ups in a volume entitled ``Fondements de la Geometrie Algebrique,'' known as FGA. Much of FGA is now common knowledge; however, some of FGA is less well known, and its full scope is familiar to few. The present book resulted from the 2003 ``Advanced School in Basic Algebraic Geometry'' at the ICTP in Trieste, Italy. The book aims to fill in Grothendieck's brief sketches. There are four themes: descent theory, Hilbert and Quot schemes, the formal existence theorem, and the Picard scheme. Most results are proved in full detail; furthermore, newer ideas are introduced to promote understanding, and many connections are drawn to newer developments. The main prerequisite is a thorough acquaintance with basic scheme theory. Thus this book is a valuable resource for anyone doing algebraic geometry.

An Invitation to Applied Category Theory

Category theory is a general mathematical theory of structures and of structures of structures. It occupied a central position in contemporary mathematics as well as computer science. This book describes the history of category theory whereby illuminating its symbiotic relationship to algebraic topology, homological algebra, algebraic geometry and mathematical

logic and elaboratively develops the connections with the epistemological significance.

The Heart of Cohomology

Informally, K-theory is a tool for probing the structure of a mathematical object such as a ring or a topological space in terms of suitably parameterized vector spaces and producing important intrinsic invariants which are useful in the study of algebr

Deformations of Algebraic Schemes

This debut novel is a profoundly absurd campus satire about immortality, obsession, obscurity, and true love.

Colonel Lágrimas

Delivers a broad, conceptual introduction to chromatic homotopy theory, focusing on contact with arithmetic and algebraic geometry.

Topoi

What do pure mathematicians do, and why do they do it? Looking beyond the conventional answers—for the sake of truth, beauty, and practical applications—this book offers an eclectic panorama of the lives and values and hopes and fears of mathematicians in the twenty-first century, assembling material from a startlingly diverse assortment of scholarly, journalistic, and pop culture sources. Drawing on his personal experiences and obsessions as well as the thoughts and opinions of mathematicians from Archimedes and Omar Khayyám to such contemporary giants as Alexander Grothendieck and Robert Langlands, Michael Harris reveals the charisma and romance of mathematics as well as its darker side. In this portrait of mathematics as a community united around a set of common intellectual, ethical, and existential challenges, he touches on a wide variety of questions, such as: Are mathematicians to blame for the 2008 financial crisis? How can we talk about the ideas we were born too soon to understand? And how should you react if you are asked to explain number theory at a dinner party? Disarmingly candid, relentlessly intelligent, and richly entertaining, Mathematics without Apologies takes readers on an unapologetic guided tour of the mathematical life, from the philosophy and sociology of mathematics to its reflections in film and popular music, with detours through the mathematical and mystical traditions of Russia, India, medieval Islam, the Bronx, and beyond.

Zeta and L-Functions of Varieties and Motives

Introducing the representation theory of groups and finite dimensional algebras, first studying basic non-commutative ring theory, this book covers the necessary background on elementary homological algebra and representations of groups up to block theory. It further discusses vertices, defect groups, Green and Brauer correspondences and Clifford theory. Whenever possible the statements are presented in a general setting for more general algebras, such as symmetric finite dimensional algebras over a field. Then, abelian and derived categories are introduced in detail and are used to explain stable module categories, as well as derived categories and their main invariants and links between them. Group theoretical applications of these theories are given – such as the structure of blocks of cyclic defect groups – whenever appropriate. Overall, many methods from the representation theory of algebras are introduced. Representation Theory assumes only the most basic knowledge of linear algebra, groups, rings and fields and guides the reader in the use of categorical equivalences in the representation theory of groups and algebras. As the book is based on lectures, it will be accessible to any graduate student in algebra and can be used for self-study as well as for classroom use.

Math on Trial

Nicolas Bourbaki, whose mathematical publications began to appear in the late 1930s and continued to be published through most of the twentieth century, was a direct product as well as a major force behind an important revolution that took place in the early decades of the twentieth century that completely changed Western culture. Pure mathematics, the area of Bourbaki's work, seems on the surface to be an abstract field of human study with no direct connection with the real world. In reality, however, it is closely intertwined with the general culture that surrounds it. Major developments in mathematics have often followed important trends in popular culture; developments in mathematics have acted as harbingers of change in the surrounding human culture. The seeds of change, the beginnings of the revolution that swept the Western world in the early decades of the twentieth century — both in mathematics and in other areas — were sown late in the previous century. This is the story both of Bourbaki and the world that created him in that time. It is the story of an elaborate intellectual joke — because Bourbaki, one of the foremost mathematicians of his day — never existed.

Genius At Play

The Mathematician's Brain poses a provocative question about the world's most brilliant yet eccentric mathematical minds: were they brilliant because of their eccentricities or in spite of them? In this thought-provoking and entertaining book, David Ruelle, the well-known mathematical physicist who helped create chaos theory, gives us a rare insider's account of the celebrated mathematicians he has known-their quirks, oddities, personal tragedies, bad behavior, descents into madness,

tragic ends, and the sublime, inexpressible beauty of their most breathtaking mathematical discoveries. Consider the case of British mathematician Alan Turing. Credited with cracking the German Enigma code during World War II and conceiving of the modern computer, he was convicted of "gross indecency" for a homosexual affair and died in 1954 after eating a cyanide-laced apple--his death was ruled a suicide, though rumors of assassination still linger. Ruelle holds nothing back in his revealing and deeply personal reflections on Turing and other fellow mathematicians, including Alexander Grothendieck, René Thom, Bernhard Riemann, and Felix Klein. But this book is more than a mathematical tell-all. Each chapter examines an important mathematical idea and the visionary minds behind it. Ruelle meaningfully explores the philosophical issues raised by each, offering insights into the truly unique and creative ways mathematicians think and showing how the mathematical setting is most favorable for asking philosophical questions about meaning, beauty, and the nature of reality. The Mathematician's Brain takes you inside the world--and heads--of mathematicians. It's a journey you won't soon forget.

The Big Questions

An outrageous graphic novel that investigates key concepts in mathematics Integers and permutations—two of the most basic mathematical objects—are born of different fields and analyzed with separate techniques. Yet when the Mathematical Sciences Investigation team of crack forensic mathematicians, led by Professor Gauss, begins its autopsies of the victims of two seemingly unrelated homicides, Arnie Integer and Daisy Permutation, they discover the most extraordinary similarities between the structures of each body. Prime Suspects is a graphic novel that takes you on a voyage of forensic discovery, exploring some of the most fundamental ideas in mathematics. Travel with Detective von Neumann as he leaves no clue unturned, from shepherds' huts in the Pyrenees to secret societies in the cafés of Paris, from the hidden codes in the music of the stones to the grisly discoveries in Finite Fields. Tremble at the ferocity of the believers in deep and rigid abstraction. Feel the frustration—and the excitement—of our young heroine, Emmy Germain, as she blazes a trail for women in mathematical research and learns from Professor Gauss, the greatest forensic detective of them all. Beautifully drawn and exquisitely detailed, Prime Suspects is unique, astonishing, and witty—a once-in-a-lifetime opportunity to experience mathematics like never before.

Loving and Hating Mathematics

Prime Obsession taught us not to be afraid to put the math in a math book. Unknown Quantity heeds the lesson well. So grab your graphing calculators, slip out the slide rules, and buckle up! John Derbyshire is introducing us to algebra through the ages-and it promises to be just what his die-hard fans have been waiting for. "Here is the story of algebra." With this deceptively simple introduction, we begin our journey. Flanked by formulae, shadowed by roots and radicals, escorted by an expert who navigates unerringly on our behalf, we are guaranteed safe passage through even the most treacherous

mathematical terrain. Our first encounter with algebraic arithmetic takes us back 38 centuries to the time of Abraham and Isaac, Jacob and Joseph, Ur and Haran, Sodom and Gomorrah. Moving deftly from Abel's proof to the higher levels of abstraction developed by Galois, we are eventually introduced to what algebraists have been focusing on during the last century. As we travel through the ages, it becomes apparent that the invention of algebra was more than the start of a specific discipline of mathematics-it was also the birth of a new way of thinking that clarified both basic numeric concepts as well as our perception of the world around us. Algebraists broke new ground when they discarded the simple search for solutions to equations and concentrated instead on abstract groups. This dramatic shift in thinking revolutionized mathematics. Written for those among us who are unencumbered by a fear of formulae, Unknown Quantity delivers on its promise to present a history of algebra. Astonishing in its bold presentation of the math and graced with narrative authority, our journey through the world of algebra is at once intellectually satisfying and pleasantly challenging.

Representation Theory

Mathematics is often thought of as the coldest expression of pure reason. But few subjects provoke hotter emotions--and inspire more love and hatred--than mathematics. And although math is frequently idealized as floating above the messiness of human life, its story is nothing if not human; often, it is all too human. Loving and Hating Mathematics is about the hidden human, emotional, and social forces that shape mathematics and affect the experiences of students and mathematicians. Written in a lively, accessible style, and filled with gripping stories and anecdotes, Loving and Hating Mathematics brings home the intense pleasures and pains of mathematical life. These stories challenge many myths, including the notions that mathematics is a solitary pursuit and a "young man's game," the belief that mathematicians are emotionally different from other people, and even the idea that to be a great mathematician it helps to be a little bit crazy. Reuben Hersh and Vera John-Steiner tell stories of lives in math from their very beginnings through old age, including accounts of teaching and mentoring, friendships and rivalries, love affairs and marriages, and the experiences of women and minorities in a field that has traditionally been unfriendly to both. Included here are also stories of people for whom mathematics has been an immense solace during times of crisis, war, and even imprisonment--as well as of those rare individuals driven to insanity and even murder by an obsession with math. This is a book for anyone who wants to understand why the most rational of human endeavors is at the same time one of the most emotional.

Mathematics and Theoretical Physics

In the wrong hands, math can be deadly. Even the simplest numbers can become powerful forces when manipulated by journalists, politicians or other public figures, but in the case of the law your liberty—and your life—can depend on the right calculation. Math on Trial tells the story of ten trials in which mathematical arguments were used—and disastrously

misused—as evidence. Despite years of math classes, most people (and most jurors) fail to detect even simple mathematical sophistry, resulting in such horrors as a medical expert's faulty calculation of probabilities providing the key evidence for a British mother's conviction for the murder of her two babies. The conviction was later overturned, but three years in prison took its toll—Sally Clark died of acute alcohol intoxication in March of 2007. Mathematicians Leila Schneps and Coralie Colmez use a wide range of examples, from a mid-19th-century dispute over wills that became a signal case in the forensic use of mathematics, to the conviction and subsequent exoneration of Amanda Knox, to show how the improper application of mathematical concepts can mean the difference between walking free and life in prison. The cases discussed include: -The Case of Amanda Knox (How a judge's denial of a second DNA test may have destroyed a chance to reveal the truth about Meredith Kercher's murder) -The Case of Joe Sneed (How a fabricated probability framed a son for his parents' grisly killing) -The Case of Sally Clark (How multiplying non-independent probabilities landed an innocent mother in jail for the murder of her children) -The Case of Janet Collins (How unjustified estimates combined with a miscalculated probability convicted an innocent couple of violent robbery) A colorful narrative of mathematical abuse featuring such characters as Charles Ponzi, Alfred Dreyfus, Hetty Green, and Oliver Wendell Holmes, Math on Trial shows that legal expertise isn't everything when it comes to proving a man innocent.

When Einstein Walked with Gödel

What's wrong with stealing? What's the best way to blood test a pot-bellied pig? Should we tolerate intolerance? In the wake of his enormously popular books, The Armchair Economistand More Sex is Safer Sex, Steven Landsburg uses concepts from maths, economics and physics to address the big questions in philosophy: Where does knowledge come from? What's the difference between right and wrong? Do our beliefs matter? Is it possible to know everything? Provocative, utterly entertaining and always surprising, The Big Questions challenges readers to re-evaluate their most fundamental beliefs and reveals the relationship between the loftiest philosophical quests and our everyday lives.

The Artist and the Mathematician

This account of deformation theory in classical algebraic geometry over an algebraically closed field presents for the first time some results previously scattered in the literature, with proofs that are relatively little known, yet relevant to algebraic geometers. Many examples are provided. Most of the algebraic results needed are proved. The style of exposition is kept at a level amenable to graduate students with an average background in algebraic geometry.

Love and Math

Algebraic topology is the study of the global properties of spaces by means of algebra. It is an important branch of modern mathematics with a wide degree of applicability to other fields, including geometric topology, differential geometry, functional analysis, differential equations, algebraic geometry, number theory, and theoretical physics. This book provides an introduction to the basic concepts and methods of algebraic topology for the beginner. It presents elements of both homology theory and homotopy theory, and includes various applications. The author's intention is to rely on the geometric approach by appealing to the reader's own intuition to help understanding. The numerous illustrations in the text also serve this purpose. Two features make the text different from the standard literature: first, special attention is given to providing explicit algorithms for calculating the homology groups and for manipulating the fundamental groups. Second, the book contains many exercises, all of which are supplied with hints or solutions. This makes the book suitable for both classroom use and for independent study.

Alexandre Grothendieck

If you have not heard about cohomology, The Heart of Cohomology may be suited for you. The book gives Fundamental notions in cohomology for examples, functors, representable functors, Yoneda embedding, derived functors, spectral sequences, derived categories are explained in elementary fashion. Applications to sheaf cohomology. In addition, the book examines cohomological aspects of D-modules and of the computation of zeta functions of the Weierstrass family.

Defying Hitler

John von Neuman was perhaps the most influential mathematician of the twentieth century, especially if his broad influence outside mathematics is included. Not only did he contribute to almost all branches of mathematics and created new fields, but he also changed post-World War II history with his work on the design of computers and with being a sought-after technical advisor to many figures in the U.S. military-political establishment in the 1940s and 1950s. The present volume is the first substantial collection of (previously mainly unpublished) letters written by von Neumann to colleagues, friends, government officials, and others. The letters give us a glimpse of the thinking of John von Neumann about mathematics, physics, computer science, science management, education, consulting, politics, and war. Readers of quite diverse backgrounds will find much of interest in this fascinating first-hand look at one of the towering figures of twentieth century science.

Mathematics without Apologies

Photographs accompanied by autobiographical text written by each mathematician.

Grothendieck-Serre Correspondence

Geometric Galois Actions: Volume 2, The Inverse Galois Problem, Moduli Spaces and Mapping Class Groups

The Proceedings of the ICM publishes the talks, by invited speakers, at the conference organized by the International Mathematical Union every 4 years. It covers several areas of Mathematics and it includes the Fields Medal and Nevanlinna, Gauss and Leelavati Prizes and the Chern Medal laudatios.

The Grasshopper King

What do pure mathematicians do, and why do they do it? Looking beyond the conventional answers—for the sake of truth, beauty, and practical applications—this book offers an eclectic panorama of the lives and values and hopes and fears of mathematicians in the twenty-first century, assembling material from a startlingly diverse assortment of scholarly, journalistic, and pop culture sources. Drawing on his personal experiences and obsessions as well as the thoughts and opinions of mathematicians from Archimedes and Omar Khayyám to such contemporary giants as Alexander Grothendieck and Robert Langlands, Michael Harris reveals the charisma and romance of mathematics as well as its darker side. In this portrait of mathematics as a community united around a set of common intellectual, ethical, and existential challenges, he touches on a wide variety of questions, such as: Are mathematicians to blame for the 2008 financial crisis? How can we talk about the ideas we were born too soon to understand? And how should you react if you are asked to explain number theory at a dinner party? Disarmingly candid, relentlessly intelligent, and richly entertaining, Mathematics without Apologies takes readers on an unapologetic guided tour of the mathematical life, from the philosophy and sociology of mathematics to its reflections in film and popular music, with detours through the mathematical and mystical traditions of Russia, India, medieval Islam, the Bronx, and beyond.

Formal Geometry and Bordism Operations

The first of its kind, this book presents a widely accessible exposition of topos theory, aimed at the philosopher-logician as well as the mathematician. It is suitable for individual study or use in class at the graduate level (it includes 500 exercises). It begins with a fully motivated introduction to category theory itself, moving always from the particular example to the abstract concept. It then introduces the notion of elementary topos, with a wide range of examples and goes on to develop its theory in depth, and to elicit in detail its relationship to Kripke's intuitionistic semantics, models of classical set theory

and the conceptual framework of sheaf theory (``localization'' of truth). Of particular interest is a Dedekind-cuts style construction of number systems in topoi, leading to a model of the intuitionistic continuum in which a ``Dedekind-real'' becomes represented as a ``continuously-variable classical real number''. The second edition contains a new chapter, entitled Logical Geometry, which introduces the reader to the theory of geometric morphisms of Grothendieck topoi, and its model-theoretic rendering by Makkai and Reyes. The aim of this chapter is to explain why Deligne's theorem about the existence of points of coherent topoi is equivalent to the classical Completeness theorem for ``geometric'' first-order formulae.

Proceedings Of The International Congress Of Mathematicians 2018 (Icm 2018) (In 4 Volumes)

The first systematic exposition of the theory of derived categories, with key applications in commutative and noncommutative algebra.

ROMANCE ACTION & ADVENTURE MYSTERY & THRILLER BIOGRAPHIES & HISTORY CHILDREN'S YOUNG ADULT FANTASY HISTORICAL FICTION HORROR LITERARY FICTION NON-FICTION SCIENCE FICTION