

Cardano And The Solution Of The Cubic Mathematics Pdf

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Reinforced Concrete Beams, Columns and Frames - Charles Casandjian 2013-02-05
This book is focused on the theoretical and practical design of reinforced concrete beams, columns and frame structures. It is based on an analytical approach of designing normal reinforced concrete structural elements that are compatible with most international design rules, including for instance the European design rules – Eurocode 2 – for reinforced concrete structures. The book tries to distinguish between what belongs to the structural design philosophy of such structural elements (related to strength of materials arguments) and what belongs to the design rule aspects associated with specific characteristic data (for the material or loading parameters). Reinforced Concrete Beams, Columns and Frames – Mechanics and Design deals with the fundamental aspects of the mechanics and design of reinforced concrete in general, both related to the Serviceability Limit State (SLS) and the Ultimate Limit State (ULS). A second book, entitled Reinforced Concrete Beams, Columns and Frames – Slender Member Analysis, deals with more advanced ULS aspects, along with instability and second-order analysis aspects. Some recent research results including the use of non-local mechanics are also presented. This book is aimed at Masters-level students, engineers, researchers and teachers in the field of reinforced concrete design. Most of the books in this area are very practical or code-oriented, whereas this book is more theoretically based, using rigorous mathematics and mechanics tools. Contents 1. Design at Serviceability Limit State (SLS). 2. Verification at Serviceability Limit State (SLS). 3. Concepts for the Design at Ultimate Limit State (ULS). 4. Bending-Curvature at Ultimate Limit State (ULS). Appendix 1. Cardano's Method. Appendix 2. Steel Reinforcement Table. About the Authors Charles Casandjian was formerly Associate Professor at INSA (French National Institute of Applied Sciences), Rennes, France and the chairman of the course on reinforced concrete design. He has published work on the mechanics of concrete and is also involved in creating a web experience for teaching reinforced concrete design – BA-CORTEX. Noël Challamel is Professor in Civil Engineering at UBS, University of South Brittany

in France and chairman of the EMI-ASCE Stability committee. His contributions mainly concern the dynamics, stability and inelastic behavior of structural components, with special emphasis on Continuum Damage Mechanics (more than 70 publications in International peer-reviewed journals). Christophe Lanos is Professor in Civil Engineering at the University of Rennes 1 in France. He has mainly published work on the mechanics of concrete, as well as other related subjects. He is also involved in creating a web experience for teaching reinforced concrete design – BA-CORTEX. Jostein Hellesland has been Professor of Structural Mechanics at the University of Oslo, Norway since January 1988. His contribution to the field of stability has been recognized and magnified by many high-quality papers in famous international journals such as *Engineering Structures*, *Thin-Walled Structures*, *Journal of Constructional Steel Research* and *Journal of Structural Engineering*.

From Cardano's Great Art to Lagrange's Reflections - Jacqueline A. Stedall 2011
This book is an exploration of a claim made by Lagrange in the autumn of 1771 as he embarked upon his lengthy "Reflexions sur la resolution algebrique des equations": that there had been few advances in the algebraic solution of equations since the time of Cardano in the mid sixteenth century. That opinion has been shared by many later historians. The present study attempts to redress that view and to examine the intertwined developments in the theory of equations from Cardano to Lagrange. A similar historical exploration led Lagrange himself to insights that were to transform the entire nature and scope of algebra. Progress was not confined to any one country: at different times mathematicians in Italy, France, the Netherlands, England, Scotland, Russia, and Germany contributed to the discussion and to a gradual deepening of understanding. In particular, the national Academies of Berlin, St. Petersburg, and Paris in the eighteenth century were crucial in supporting informed mathematical communities and encouraging the wider dissemination of key ideas. This study therefore truly highlights the existence of a European mathematical heritage. The book is written in three parts. Part I offers an overview of the period from Cardano to Newton (1545 to 1707) and is arranged chronologically. Part II covers the period from Newton to Lagrange (1707 to 1771) and treats the material according to key themes. Part III is a brief account of the aftermath of the discoveries made in the 1770s. The book attempts throughout to capture the reality of mathematical discovery by inviting the reader to follow in the footsteps of the authors themselves, with as few changes as possible to the original notation and style of presentation.

The Equation that Couldn't Be Solved - Mario Livio 2005-09-19

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.

The Mathematics of Ciphers - S.C. Coutinho 1999-01-15

This book is an introduction to the algorithmic aspects of number theory and its applications to cryptography, with special emphasis on the RSA cryptosystem. It covers many of the familiar topics of elementary number theory, all with an algorithmic twist. The text also includes many interesting historical notes.

The History of Mathematics: A Source-Based Approach - June Barrow-Green 2021-12-17

The History of Mathematics: A Source-Based Approach is a comprehensive history of the development of mathematics. This, the first volume of the two-volume set, takes readers from the beginning of counting in prehistory to 1600 and the threshold of the discovery of calculus. It is notable for the extensive engagement with original—primary and secondary—source material. The coverage is worldwide, and embraces developments, including education, in Egypt, Mesopotamia, Greece, China, India, the Islamic world and Europe. The emphasis on astronomy and its historical relationship to mathematics is new, and the presentation of every topic is informed by the most recent scholarship in the field. The two-volume set was designed as a textbook for the authors' acclaimed year-long course at the Open University. It is, in addition to being an innovative and insightful textbook, an invaluable resource for students and scholars of the history of mathematics. The authors, each among the most distinguished mathematical historians in the world, have produced over fifty books and earned scholarly and expository prizes from the major mathematical societies of the English-speaking world.

A History of Mathematical Impossibility - Jesper Lützen 2023-01-26

Many of the most famous results in mathematics are impossibility theorems stating that something cannot be done. Good examples include the quadrature of the circle by ruler and compass, the solution of the quintic equation by radicals, Fermat's last theorem, and the impossibility of proving the parallel postulate from the other axioms of Euclidean geometry. This book tells the history of these and many other impossibility theorems starting with the ancient Greek proof of the incommensurability of the side and the diagonal in a square. Lützen argues that the role of impossibility results have changed over time. At first, they were considered rather unimportant meta-statements concerning mathematics but gradually they obtained the role of important proper mathematical results that can and should be proved. While mathematical impossibility proofs are more rigorous than impossibility arguments in other areas of life, mathematicians have employed great ingenuity to circumvent impossibilities by changing the rules of the game. For example, complex numbers were invented in order to make impossible equations solvable. In this way, impossibilities have been a strong creative force in the development of mathematics, mathematical physics, and social science.

The Rules of Algebra - Girolamo Cardano 2007-01-01

First published in 1545, this cornerstone in the history of mathematics contains the first revelation of the principles for solving cubic and biquadratic equations. T. Richard Witmer's excellent translation from the Latin, adapted to modern mathematical syntax, will appeal to both mathematicians and historians. Foreword by Oystein Ore.

A Discourse Concerning Algebra - Jacqueline A. Stedall 2002

For historians of mathematics and those interested in the history of science, 'A Discourse Concerning Algebra' provides a new and readable account of the rise of algebra in England from the Medieval period to the later years of the 17th century. Including new research, this is the most detailed study to date of early modern English algebra, which builds on work published in 1685 by John Wallis (Savilian Professor of Geometry at Oxford) on the history of algebra. Stedall's book follows the reception and dissemination of important algebraic ideas and methods from continental Europe (especially those of Viète) and the consequent revolution in the state of English mathematics in the 17th century. The text emphasises the contribution of Wallis, but substantial reference is also provided to other important mathematicians such as Harriot, Oughtred, Pell and Brouncker.

The Telling of the Unattainable Attempt to Avoid the Casus Irreducibilis for Cubic Equations - Sara Confalonieri 2013

Solving cubic equations by a formula that involves only the elementary operations of sum, product, and exponentiation of the coefficients is one of the greatest results in 16th century mathematics. This was achieved by Girolamo Cardano's *Ars Magna* in 1545. Still, a deep, substantial difference between the quadratic and the cubic formula exists: while the quadratic formula only involves imaginary numbers when all the solutions are imaginary too, it may happen that the cubic formula contains imaginary numbers, even when the three solutions are anyway all real (and different). This means that a scholar of the time could stumble upon numerical cubic equations of which he already knew three (real) solutions and the cubic formula of which actually contains square roots of negative numbers. This will be lately called the "casus irreducibilis". Cardano's *De Regula Algorismi* (Basel, 1570) is (at least, partially) meant to try to overcome the problem entailed by it. Its (partial) analysis is the heart of this dissertation.

Mathematics in Historical Context - Jeff Suzuki 2009-08-27

An exploration of the interaction between mathematics, mathematicians and society. What would Newton see if he looked out his window?

Journey through Genius - William Dunham 1991-08-01

Like masterpieces of art, music, and literature, great mathematical theorems are creative milestones, works of genius destined to last forever. Now William Dunham gives them the attention they deserve. Dunham places each theorem within its historical context and explores the very human and often turbulent life of the creator – from Archimedes, the absentminded theoretician whose absorption in his work often precluded eating or bathing, to Gerolamo Cardano, the sixteenth-century mathematician whose accomplishments flourished despite a bizarre array of misadventures, to the paranoid genius of modern times, Georg Cantor. He also provides step-by-step proofs for the theorems, each easily

accessible to readers with no more than a knowledge of high school mathematics. A rare combination of the historical, biographical, and mathematical, *Journey Through Genius* is a fascinating introduction to a neglected field of human creativity. "It is mathematics presented as a series of works of art; a fascinating lingering over individual examples of ingenuity and insight. It is mathematics by lightning flash." –Isaac Asimov

Solving Transcendental Equations - John P. Boyd 2014-09-23

Transcendental equations arise in every branch of science and engineering. While most of these equations are easy to solve, some are not, and that is where this book serves as the mathematical equivalent of a skydiver's reserve parachute--not always needed, but indispensable when it is. The author's goal is to teach the art of finding the root of a single algebraic equation or a pair of such equations.

Math through the Ages: A Gentle History for Teachers and Others Expanded Second Edition - William P. Berlinghoff 2021-04-29

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

The European Mathematical Awakening - Frank J. Swetz 2013-01-01

"A global survey of the history of mathematics, this newly corrected and updated collection of 32 highly readable essays features contributions by such distinguished educators as Carl Boyer and Morris Kline. Fascinating articles explore studies by Fibonacci, Descartes, Cardano, Kepler, Galileo, Pascal, Newton, Euler, and others. Suitable for readers with no background in math"--

Mathematical Expeditions - Reinhard Laubenbacher 2013-12-01

The stories of five mathematical journeys into new realms, pieced together from the writings of the explorers themselves. Some were guided by mere curiosity and the thrill of adventure, others by more practical motives. In each case the outcome was a vast expansion of the known mathematical world and the realisation that still greater vistas remain to be explored. The authors tell these stories by guiding readers through the very words of the mathematicians at the heart of these events, providing an insight into the art of approaching mathematical problems. The five chapters are completely independent, with varying levels of mathematical sophistication, and will attract students, instructors, and the intellectually curious reader. By working through some of

the original sources and supplementary exercises, which discuss and solve -- or attempt to solve -- a great problem, this book helps readers discover the roots of modern problems, ideas, and concepts, even whole subjects. Students will also see the obstacles that earlier thinkers had to clear in order to make their respective contributions to five central themes in the evolution of mathematics.

The Unattainable Attempt to Avoid the Casus Irreducibilis for Cubic Equations - Sara Confalonieri 2015-03-18

Sara Confalonieri presents an overview of Cardano's mathematical treatises and, in particular, discusses the writings that deal with cubic equations. The author gives an insight into the latest of Cardano's algebraic works, the *De Regula Aliza* (1570), which displays the attempts to overcome the difficulties entailed by the casus irreducibilis. Notably some of Cardano's strategies in this treatise are thoroughly analyzed. Far from offering an ultimate account of *De Regula Aliza*, by one of the most outstanding scholars of the 16th century, the present work is a first step towards a better understanding.

Episodes in the Mathematics of Medieval Islam - J.L. Berggren 2017-01-18

This book presents an account of selected topics from key mathematical works of medieval Islam, based on the Arabic texts themselves. Many of these works had a great influence on mathematics in Western Europe. Topics covered in the first edition include arithmetic, algebra, geometry, trigonometry, and numerical approximation; this second edition adds number theory and combinatorics. Additionally, the author has included selections from the western regions of medieval Islam--both North Africa and Spain. The author puts the works into their historical context and includes numerous examples of how mathematics interacted with Islamic society.

Elements of Abstract Algebra - Allan Clark 2012-07-06

Lucid coverage of the major theories of abstract algebra, with helpful illustrations and exercises included throughout. Unabridged, corrected republication of the work originally published 1971. Bibliography. Index. Includes 24 tables and figures.

The Math Book - Clifford A. Pickover 2009

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.

Mathematics and Its History - John Stillwell 2010-08-02

From a review of the second edition: "This book covers many interesting topics not usually covered in a present day undergraduate course, as well as certain basic topics such as the development of the calculus and the solution of polynomial equations. The fact that the topics are introduced in their historical contexts will enable students to better appreciate and understand the mathematical ideas involved...If one constructs a list of topics central to a history course, then they would closely resemble those chosen here." (David Parrott, Australian Mathematical Society) This book offers a collection of historical essays detailing a large variety of mathematical disciplines and issues; it's accessible to a broad audience. This third edition includes new chapters on simple groups and new sections on alternating groups and the Poincare conjecture. Many more exercises have been added as well as commentary

that helps place the exercises in context.

An Imaginary Tale - Paul J. Nahin 2010-02-22

Today complex numbers have such widespread practical use--from electrical engineering to aeronautics--that few people would expect the story behind their derivation to be filled with adventure and enigma. In *An Imaginary Tale*, Paul Nahin tells the 2000-year-old history of one of mathematics' most elusive numbers, the square root of minus one, also known as i . He recreates the baffling mathematical problems that conjured it up, and the colorful characters who tried to solve them. In 1878, when two brothers stole a mathematical papyrus from the ancient Egyptian burial site in the Valley of Kings, they led scholars to the earliest known occurrence of the square root of a negative number. The papyrus offered a specific numerical example of how to calculate the volume of a truncated square pyramid, which implied the need for i . In the first century, the mathematician-engineer Heron of Alexandria encountered i in a separate project, but fudged the arithmetic; medieval mathematicians stumbled upon the concept while grappling with the meaning of negative numbers, but dismissed their square roots as nonsense. By the time of Descartes, a theoretical use for these elusive square roots--now called "imaginary numbers"--was suspected, but efforts to solve them led to intense, bitter debates. The notorious i finally won acceptance and was put to use in complex analysis and theoretical physics in Napoleonic times. Addressing readers with both a general and scholarly interest in mathematics, Nahin weaves into this narrative entertaining historical facts and mathematical discussions, including the application of complex numbers and functions to important problems, such as Kepler's laws of planetary motion and ac electrical circuits. This book can be read as an engaging history, almost a biography, of one of the most evasive and pervasive "numbers" in all of mathematics. Some images inside the book are unavailable due to digital copyright restrictions.

A to Z of Mathematicians - Tucker McElroy 2014-05-14

Profiles more than 150 mathematicians from around the world who made important contributions to their field, including Rene Descartes, Emily Noether and Bernhard Riemann.

99 Variations on a Proof - Philip Ording 2019-02-05

An exploration of mathematical style through 99 different proofs of the same theorem This book offers a multifaceted perspective on mathematics by demonstrating 99 different proofs of the same theorem. Each chapter solves an otherwise unremarkable equation in distinct historical, formal, and imaginative styles that range from Medieval, Topological, and Doggerel to Chromatic, Electrostatic, and Psychedelic. With a rare blend of humor and scholarly aplomb, Philip Ording weaves these variations into an accessible and wide-ranging narrative on the nature and practice of mathematics. Inspired by the experiments of the Paris-based writing group known as the Oulipo--whose members included Raymond Queneau, Italo Calvino, and Marcel Duchamp--Ording explores new ways to examine the aesthetic possibilities of mathematical activity. *99 Variations on a Proof* is a mathematical take on Queneau's *Exercises in Style*, a collection of 99 retellings of the same story, and it draws unexpected connections to everything from mysticism and technology to architecture and sign language. Through diagrams, found material, and other imagery, Ording

illustrates the flexibility and creative potential of mathematics despite its reputation for precision and rigor. Readers will gain not only a bird's-eye view of the discipline and its major branches but also new insights into its historical, philosophical, and cultural nuances. Readers, no matter their level of expertise, will discover in these proofs and accompanying commentary surprising new aspects of the mathematical landscape.

The Secret Formula - Fabio Toscano 2020-05-19

The legendary Renaissance math duel that ushered in the modern age of algebra. The Secret Formula tells the story of two Renaissance mathematicians whose jealousies, intrigues, and contentious debates led to the discovery of a formula for the solution of the cubic equation. Niccolò Tartaglia was a talented and ambitious teacher who possessed a secret formula—the key to unlocking a seemingly unsolvable, two-thousand-year-old mathematical problem. He wrote it down in the form of a poem to prevent other mathematicians from stealing it. Gerolamo Cardano was a physician, gifted scholar, and notorious gambler who would not hesitate to use flattery and even trickery to learn Tartaglia's secret. Set against the backdrop of sixteenth-century Italy, The Secret Formula provides new and compelling insights into the peculiarities of Renaissance mathematics while bringing a turbulent and culturally vibrant age to life. It was an era when mathematicians challenged each other in intellectual duels held outdoors before enthusiastic crowds. Success not only enhanced the winner's reputation, but could result in prize money and professional acclaim. After hearing of Tartaglia's spectacular victory in one such contest in Venice, Cardano invited him to Milan, determined to obtain his secret by whatever means necessary. Cardano's intrigues paid off. In 1545, he was the first to publish a general solution of the cubic equation. Tartaglia, eager to take his revenge by establishing his superiority as the most brilliant mathematician of the age, challenged Cardano to the ultimate mathematical duel. A lively and compelling account of genius, betrayal, and all-too-human failings, The Secret Formula reveals the epic rivalry behind one of the fundamental ideas of modern algebra.

Towards Higher Mathematics: A Companion - Richard Earl 2017-09-07

This book allows students to stretch their mathematical abilities and bridges the gap between school and university.

Tales of Physicists and Mathematicians - Simon Gindikin 2013-12-01

This revised and greatly expanded edition of the Russian classic contains a wealth of new information about the lives of many great mathematicians and scientists, past and present. Written by a distinguished mathematician and featuring a unique mix of mathematics, physics, and history, this text combines original source material and provides careful explanations for some of the most significant discoveries in mathematics and physics. What emerges are intriguing, multifaceted biographies that will interest readers at all levels.

Beyond the Quadratic Formula - Ron Irving 2020-01-29

The quadratic formula for the solution of quadratic equations was discovered independently by scholars in many ancient cultures and is familiar to everyone. Less well known are formulas for solutions of cubic and quartic equations whose discovery was the high point of 16th century mathematics. Their study forms the heart of this book, as part of the broader theme that a polynomial's

coefficients can be used to obtain detailed information on its roots. The book is designed for self-study, with many results presented as exercises and some supplemented by outlines for solution. The intended audience includes in-service and prospective secondary mathematics teachers, high school students eager to go beyond the standard curriculum, undergraduates who desire an in-depth look at a topic they may have unwittingly skipped over, and the mathematically curious who wish to do some work to unlock the mysteries of this beautiful subject.

Journey through Mathematics - Enrique A. González-Velasco 2011-08-08

This book offers an accessible and in-depth look at some of the most important episodes of two thousand years of mathematical history. Beginning with trigonometry and moving on through logarithms, complex numbers, infinite series, and calculus, this book profiles some of the lesser known but crucial contributors to modern day mathematics. It is unique in its use of primary sources as well as its accessibility; a knowledge of first-year calculus is the only prerequisite. But undergraduate and graduate students alike will appreciate this glimpse into the fascinating process of mathematical creation. The history of math is an intercontinental journey, and this book showcases brilliant mathematicians from Greece, Egypt, and India, as well as Europe and the Islamic world. Several of the primary sources have never before been translated into English. Their interpretation is thorough and readable, and offers an excellent background for teachers of high school mathematics as well as anyone interested in the history of math.

Abel's Proof - Peter Pesic 2016-06-17

The intellectual and human story of a mathematical proof that transformed our ideas about mathematics. In 1824 a young Norwegian named Niels Henrik Abel proved conclusively that algebraic equations of the fifth order are not solvable in radicals. In this book Peter Pesic shows what an important event this was in the history of thought. He also presents it as a remarkable human story. Abel was twenty-one when he self-published his proof, and he died five years later, poor and depressed, just before the proof started to receive wide acclaim. Abel's attempts to reach out to the mathematical elite of the day had been spurned, and he was unable to find a position that would allow him to work in peace and marry his fiancé. But Pesic's story begins long before Abel and continues to the present day, for Abel's proof changed how we think about mathematics and its relation to the "real" world. Starting with the Greeks, who invented the idea of mathematical proof, Pesic shows how mathematics found its sources in the real world (the shapes of things, the accounting needs of merchants) and then reached beyond those sources toward something more universal. The Pythagoreans' attempts to deal with irrational numbers foreshadowed the slow emergence of abstract mathematics. Pesic focuses on the contested development of algebra—which even Newton resisted—and the gradual acceptance of the usefulness and perhaps even beauty of abstractions that seem to invoke realities with dimensions outside human experience. Pesic tells this story as a history of ideas, with mathematical details incorporated in boxes. The book also includes a new annotated translation of Abel's original proof.

The Great Art - Girolamo Cardano 1968

Problems And Solutions In Mathematical Olympiad (Secondary 3) - Jun Ge

2022-06-16

The series is edited by the head coaches of China's IMO National Team. Each volume, catering to different grades, is contributed by the senior coaches of the IMO National Team. The Chinese edition has won the award of Top 50 Most Influential Educational Brands in China. The series is created in line with the mathematics cognition and intellectual development levels of the students in the corresponding grades. All hot mathematics topics of the competition are included in the volumes and are organized into chapters where concepts and methods are gradually introduced to equip the students with necessary knowledge until they can finally reach the competition level. In each chapter, well-designed problems including those collected from real competitions are provided so that the students can apply the skills and strategies they have learned to solve these problems. Detailed solutions are provided selectively. As a feature of the series, we also include some solutions generously offered by the members of Chinese national team and national training team.

Mathematical Circles, Volume I: In Mathematical Circles: Quadrants I, II, III, IV - Howard W. Eves 2020-08-03

The Analytic Art - François Viète 2006-01-01

This historic work consists of several treatises that developed the first consistent, coherent, and systematic conception of algebraic equations. Originally published in 1591, it pioneered the notion of using symbols of one kind (vowels) for unknowns and of another kind (consonants) for known quantities, thus streamlining the solution of equations. François Viète (1540-1603), a lawyer at the court of King Henry II in Tours and Paris, wrote several treatises that are known collectively as *The Analytic Art*. His novel approach to the study of algebra developed the earliest articulated theory of equations, allowing not only flexibility and generality in solving linear and quadratic equations, but also something completely new—a clear analysis of the relationship between the forms of the solutions and the values of the coefficients of the original equation. Viète regarded his contribution as developing a "systematic way of thinking" leading to general solutions, rather than just a "bag of tricks" to solve specific problems. These essays demonstrate his method of applying his own ideas to existing usage in ways that led to clear formulation and solution of equations.

Excursions in the History of Mathematics - Israel Kleiner 2012-02-02

This book comprises five parts. The first three contain ten historical essays on important topics: number theory, calculus/analysis, and proof, respectively. Part four deals with several historically oriented courses, and Part five provides biographies of five mathematicians who played major roles in the historical events described in the first four parts of the work. *Excursions in the History of Mathematics* was written with several goals in mind: to arouse mathematics teachers' interest in the history of their subject; to encourage mathematics teachers with at least some knowledge of the history of mathematics to offer courses with a strong historical component; and to provide an historical perspective on a number of basic topics taught in mathematics courses.

Math through the Ages: A Gentle History for Teachers and Others Expanded Second Edition - William P. Berlinghoff 2020-05-05

'Math through the Ages' is a treasure, one of the best history of math books at its level ever written. Somehow, it manages to stay true to a surprisingly sophisticated story, while respecting the needs of its audience. Its overview of the subject captures most of what one needs to know, and the 30 sketches are small gems of exposition that stimulate further exploration. --Glen van Brummelen, Quest University, President (2012-14) of the Canadian Society for History and Philosophy of Mathematics Where did math come from? Who thought up all those algebra symbols, and why? What is the story behind π ? ... negative numbers? ... the metric system? ... quadratic equations? ... sine and cosine? ... logs? The 30 independent historical sketches in Math through the Ages answer these questions and many others in an informal, easygoing style that is accessible to teachers, students, and anyone who is curious about the history of mathematical ideas. Each sketch includes Questions and Projects to help you learn more about its topic and to see how the main ideas fit into the bigger picture of history. The 30 short stories are preceded by a 58-page bird's-eye overview of the entire panorama of mathematical history, a whirlwind tour of the most important people, events, and trends that shaped the mathematics we know today. 'What to Read Next' and reading suggestions after each sketch provide starting points for readers who want to learn more. This book is ideal for a broad spectrum of audiences, including students in history of mathematics courses at the late high school or early college level, pre-service and in-service teachers, and anyone who just wants to know a little more about the origins of mathematics.

Makers of Mathematics - Stuart Hollingdale 2014-06-10

Each chapter of this accessible portrait of the evolution of mathematics examines the work of an individual – Archimedes, Descartes, Newton, Einstein, others – to explore the mathematics of his era. 1989 edition.

The Book of My Life - Girolamo Cardano 2002-10-31

A bright star of the Italian Renaissance, Girolamo Cardano was an internationally-sought-after astrologer, physician, and natural philosopher, a creator of modern algebra, and the inventor of the universal joint. Condemned by the Inquisition to house arrest in his old age, Cardano wrote The Book of My Life, an unvarnished and often outrageous account of his character and conduct. Whether discussing his sex life or his diet, the plots of academic rivals or meetings with supernatural beings, or his deep sorrow when his beloved son was executed for murder, Cardano displays the same unbounded curiosity that made him a scientific pioneer. At once picaresque adventure and campus comedy, curriculum vitae, and last will, The Book of My Life is an extraordinary Renaissance self-portrait—a book to set beside Montaigne's Essays and Benvenuto Cellini's Autobiography.

Mathematical Encounters and Pedagogical Detours - Boris Koichu 2021-02-04

This book explores the idea that mathematics educators and teachers are also problem solvers and learners, and as such they constantly experience mathematical and pedagogical disturbances. Accordingly, many original tasks and learning activities are results of personal mathematical and pedagogical disturbances of their designers, who then transpose these disturbances into

learning opportunities for their students. This learning-transposition process is a cornerstone of mathematics teacher education as a lived, developing enterprise. Mathematical Encounters and Pedagogical Detours unfold the process and illustrate it by various examples. The book engages readers in original tasks, shares the results of task implementation and describes how these results inform the development of new tasks, which often intertwine mathematics and pedagogy. Most importantly, the book includes a dialogue between the authors based on the stories of their own learning, which triggers continuous exploration of learning opportunities for their students.

The Secret Formula - Fabio Toscano 2020-05-19

The legendary Renaissance math duel that ushered in the modern age of algebra The Secret Formula tells the story of two Renaissance mathematicians whose jealousies, intrigues, and contentious debates led to the discovery of a formula for the solution of the cubic equation. Niccolò Tartaglia was a talented and ambitious teacher who possessed a secret formula—the key to unlocking a seemingly unsolvable, two-thousand-year-old mathematical problem. He wrote it down in the form of a poem to prevent other mathematicians from stealing it. Gerolamo Cardano was a physician, gifted scholar, and notorious gambler who would not hesitate to use flattery and even trickery to learn Tartaglia's secret. Set against the backdrop of sixteenth-century Italy, The Secret Formula provides new and compelling insights into the peculiarities of Renaissance mathematics while bringing a turbulent and culturally vibrant age to life. It was an era when mathematicians challenged each other in intellectual duels held outdoors before enthusiastic crowds. Success not only enhanced the winner's reputation, but could result in prize money and professional acclaim. After hearing of Tartaglia's spectacular victory in one such contest in Venice, Cardano invited him to Milan, determined to obtain his secret by whatever means necessary. Cardano's intrigues paid off. In 1545, he was the first to publish a general solution of the cubic equation. Tartaglia, eager to take his revenge by establishing his superiority as the most brilliant mathematician of the age, challenged Cardano to the ultimate mathematical duel. A lively and compelling account of genius, betrayal, and all-too-human failings, The Secret Formula reveals the epic rivalry behind one of the fundamental ideas of modern algebra.

A Concise History of Mathematics - Dirk Jan Struik 1967

This compact, well-written history covers major mathematical ideas and techniques from the ancient Near East to 20th-century computer theory, surveying the works of Archimedes, Pascal, Gauss, Hilbert, and many others. "The author's ability as a first-class historian as well as an able mathematician has enabled him to produce a work which is unquestionably one of the best." – Nature.