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Excursions in Mathematics Excursions in Number Theory Excursions in Geometry Excursions in Modern Mathematics An Excursion through Elementary Mathematics, Volume I An Excursion through Elementary Mathematics, Volume II Mathematical Excursions, Enhanced Edition Mathematical Excursions to the World's Great Buildings Challenge and Thrill of Pre-College Mathematics An Excursion Through Discrete Differential Geometry Excursions in Calculus An Excursion through Elementary Mathematics, Volume III Mathematical Excursions Computational Excursions in Analysis and Number Theory Introduction to Graph Theory Excursions Into Mathematics Comparing Forests Problem-Solving Strategies Local Times and Excursion Theory for Brownian Motion Excursions in Classical Analysis An Indefinite Excursion in Operator Theory An Excursion in Diagrammatic Algebra Mathematical Excursion, Enhanced Edition Mathematical Excursions Magnificent Mistakes in Mathematics Proofs of the Cantor-Bernstein Theorem Here's Looking at Euclid An Excursion through Elementary Mathematics, Volume I Summing It Up Uncommon Mathematical Excursions Mathematical Circles The Grapes of Math The Joy of X

**Polynomials HIGHER ALGEBRA Morphological Models
of Random Structures A Mathematician's Lament
Excursions in Modern Mathematics with Mini-
Excursions Excursions of Markov Processes Random
Fields and Geometry**

From triangles, rotations and power laws, to cones, curves and the dreaded calculus, Alex takes you on a journey of mathematical discovery with his signature wit and limitless enthusiasm. He sifts through over 30,000 survey submissions to uncover the world's favourite number, and meets a mathematician who looks for universes in his garage. He attends the World Mathematical Congress in India, and visits the engineer who designed the first roller-coaster loop. Get hooked on math as Alex delves deep into humankind's turbulent relationship with numbers, and reveals how they have shaped the world we live in. This monograph is devoted to a completely new approach to geometric problems arising in the study of random fields. The groundbreaking material in Part III, for which the background is carefully prepared in Parts I and II, is of both theoretical and practical importance, and striking in the way in which problems arising in geometry and probability are beautifully intertwined. "Random Fields and Geometry" will be useful for probabilists and statisticians, and for theoretical and applied mathematicians who wish to learn about new relationships between geometry and probability. It will

be helpful for graduate students in a classroom setting, or for self-study. Finally, this text will serve as a basic reference for all those interested in the companion volume of the applications of the theory. Presents a modern, readable introduction to spaces with indefinite inner product and their operator theory. Discrete Differential Geometry (DDG) is an emerging discipline at the boundary between mathematics and computer science. It aims to translate concepts from classical differential geometry into a language that is purely finite and discrete, and can hence be used by algorithms to reason about geometric data. In contrast to standard numerical approximation, the central philosophy of DDG is to faithfully and exactly preserve key invariants of geometric objects at the discrete level. This process of translation from smooth to discrete helps to both illuminate the fundamental meaning behind geometric ideas and provide useful algorithmic guarantees. This volume is based on lectures delivered at the 2018 AMS Short Course "Discrete Differential Geometry," held January 8-9, 2018, in San Diego, California. The papers in this volume illustrate the principles of DDG via several recent topics: discrete nets, discrete differential operators, discrete mappings, discrete conformal geometry, and discrete optimal transport. Too often math gets a bad rap, characterized as dry and difficult. But, Alex Bellos says, "math can be inspiring and brilliantly creative. Mathematical thought is one of the

great achievements of the human race, and arguably the foundation of all human progress. The world of mathematics is a remarkable place." Bellos has traveled all around the globe and has plunged into history to uncover fascinating stories of mathematical achievement, from the breakthroughs of Euclid, the greatest mathematician of all time, to the creations of the Zen master of origami, one of the hottest areas of mathematical work today. Taking us into the wilds of the Amazon, he tells the story of a tribe there who can count only to five and reports on the latest findings about the math instinct—including the revelation that ants can actually count how many steps they've taken. Journeying to the Bay of Bengal, he interviews a Hindu sage about the brilliant mathematical insights of the Buddha, while in Japan he visits the godfather of Sudoku and introduces the brainteasing delights of mathematical games. Exploring the mysteries of randomness, he explains why it is impossible for our iPods to truly randomly select songs. In probing the many intrigues of that most beloved of numbers, pi, he visits with two brothers so obsessed with the elusive number that they built a supercomputer in their Manhattan apartment to study it. Throughout, the journey is enhanced with a wealth of intriguing illustrations, such as of the clever puzzles known as tangrams and the crochet creation of an American math professor who suddenly realized one day that she could knit a representation of higher dimensional

space that no one had been able to visualize. Whether writing about how algebra solved Swedish traffic problems, visiting the Mental Calculation World Cup to disclose the secrets of lightning calculation, or exploring the links between pineapples and beautiful teeth, Bellos is a wonderfully engaging guide who never fails to delight even as he edifies. Here's Looking at Euclid is a rare gem that brings the beauty of math to life. MATHEMATICAL EXCURSIONS, Third Edition, teaches students that mathematics is a system of knowing and understanding our surroundings. For example, sending information across the Internet is better understood when one understands prime numbers; the perils of radioactive waste take on new meaning when one understands exponential functions; and the efficiency of the flow of traffic through an intersection is more interesting after seeing the system of traffic lights represented in a mathematical form. Students will learn those facets of mathematics that strengthen their quantitative understanding and expand the way they know, perceive, and comprehend their world. We hope you enjoy the journey. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version. Two veteran math educators demonstrate how some "magnificent mistakes" had profound consequences for our understanding of mathematics' key concepts. In the nineteenth century, English mathematician William Shanks spent fifteen

years calculating the value of pi, setting a record for the number of decimal places. Later, his calculation was reproduced using large wooden numerals to decorate the cupola of a hall in the Palais de la Découverte in Paris. However, in 1946, with the aid of a mechanical desk calculator that ran for seventy hours, it was discovered that there was a mistake in the 528th decimal place. Today, supercomputers have determined the value of pi to trillions of decimal places. This is just one of the amusing and intriguing stories about mistakes in mathematics in this layperson's guide to mathematical principles. In another example, the authors show that when we "prove" that every triangle is isosceles, we are violating a concept not even known to Euclid - that of "betweenness." And if we disregard the time-honored Pythagorean theorem, this is a misuse of the concept of infinity. Even using correct procedures can sometimes lead to absurd - but enlightening - results. Requiring no more than high-school-level math competency, this playful excursion through the nuances of math will give you a better grasp of this fundamental, all-important science. This lively and accessible exploration of the nature of mathematics examines the role of the mathematician as well as the four major branches: number theory, algebra, geometry, and analysis. 1. A sphere -- 2. Surfaces, folds, and cusps -- 3. The inside and outside -- 4. Dimensions -- 5. Immersed surfaces -- 6. Movies -- 7. Movie moves -- 8. Taxonomic summary -- 9. How not

to turn the sphere inside-out -- 10. A physical metaphor -- 11. Sarah's thesis -- 12. The eversion -- 13. The double point and fold surfaces

By presenting problem solving in purposeful and meaningful contexts, **MATHEMATICAL EXCURSIONS, 2/e**, provides students in the Liberal Arts course with a glimpse into the nature of mathematics and how it is used to understand our world. Highlights of the book include the proven Aufmann Interactive Method and multi-part Excursion exercises that emphasize collaborative learning. An extensive technology program provides instructors and students with a comprehensive set of support tools. This Enhanced Edition includes instant access to WebAssign, the most widely-used and reliable homework system. WebAssign presents over 500 problems, as well as links to relevant textbook sections, that help students grasp the concepts needed to succeed in this course. As an added bonus, the Start Smart Guide has been bound into this text. This guide contains instructions to help students learn the basics of WebAssign quickly. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

“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. The Classic Texts Series is the only of its kind selection of classic pieces of work that started off as bestseller and continues to be the bestseller even today. These classic texts have been designed so as to work as elementary textbooks which play a crucial role in building the concepts from scratch as in-depth knowledge of concepts is necessary for students preparing for various entrance exams. The present book on Higher Algebra presents all the elements of Higher Algebra in a single book meant to work as textbook for the students beginning their preparation of the varied aspects covered under Higher Algebra. The present book has been divided into 35 chapters namely Ratio, Proportion, Variation, Arithmetical Progression, Geometrical Progression, Harmonical Progression Theorems Connected with The Progression, Scales of Notation, Surds & Imaginary Quantities, The Theory of Quadratic Equations, Miscellaneous Equations, Permutations & Combinations, Mathematical Induction, Binomial Theorem Positive Integral Index, Binomial Theorem, Any Index, Multinomial Theorem, Logarithms, Exponential & Logarithmic Series, Interest

& Annuities, Inequalities, Limiting Values & Vanishing Fractions, Convergency & Divergency of Series, Undetermined Coefficients, Partial Fractions, Recurring Series, Continued Fractions, Recurring Series, Continued Fractions, Indeterminate Equations of the First Degree, Recurring Continued Fractions, Indeterminate Equations of the Second Degree, Summation of Series, Theory of Numbers, The General Theory of Continued Fractions, Probability, Determinants, Miscellaneous Theorems & Examples and Theory of Equations, each subdivided into number of topics. The first few chapters in the book have been devoted to a fuller discussion of Ratio, Proportions, Variation and the Progressions. Both the theoretical text as well as examples have been treated minutely which will help in better understanding of the concepts covered in the book. Theoretical explanation of the concepts in points has been provided at the beginning of each chapter. At the end of each chapter, unsolved practice exercises have been provided to help aspirants revise the concepts discussed in the chapter. At the end of chapterwise study, miscellaneous examples have also been given along with answers and solutions to the unsolved examples covered in each chapter. All the relevant theorems covered under the syllabi of Higher Algebra have also been covered in the detail in this book. As the book covers the whole syllabi of Higher Algebra in detail along with ample number of solved examples, it for sure will help the students

perfect the varied concepts covered under the Higher Algebra section. A straightedge, compass, and a little thought are all that's needed to discover the intellectual excitement of geometry. Harmonic division and Apollonian circles, inversive geometry, hexlet, Golden Section, more. 132 illustrations. Aimed at "the mathematically traumatized," this text offers nontechnical coverage of graph theory, with exercises. Discusses planar graphs, Euler's formula, Platonic graphs, coloring, the genus of a graph, Euler walks, Hamilton walks, more. 1976 edition. Challenging, accessible mathematical adventures involving prime numbers, number patterns, irrationals and iterations, calculating prodigies, and more. No special training is needed, just high school mathematics and an inquisitive mind. "A splendidly written, well selected and presented collection. I recommend the book unreservedly to all readers." — Martin Gardner. This book provides a comprehensive, in-depth overview of elementary mathematics as explored in Mathematical Olympiads around the world. It expands on topics usually encountered in high school and could even be used as preparation for a first-semester undergraduate course. This first volume covers Real Numbers, Functions, Real Analysis, Systems of Equations, Limits and Derivatives, and much more. As part of a collection, the book differs from other publications in this field by not being a mere selection of questions or a set of tips and tricks that applies to specific

problems. It starts from the most basic theoretical principles, without being either too general or too axiomatic. Examples and problems are discussed only if they are helpful as applications of the theory. Propositions are proved in detail and subsequently applied to Olympic problems or to other problems at the Olympic level. The book also explores some of the hardest problems presented at National and International Mathematics Olympiads, as well as many essential theorems related to the content. An extensive Appendix offering hints on or full solutions for all difficult problems rounds out the book. This monograph discusses the existence and regularity properties of local times associated to a continuous semimartingale, as well as excursion theory for Brownian paths. Realizations of Brownian excursion processes may be translated in terms of the realizations of a Wiener process under certain conditions. With this aim in mind, the monograph presents applications to topics which are not usually treated with the same tools, e.g.: arc sine law, laws of functionals of Brownian motion, and the Feynman-Kac formula. Describes the mathematics behind the design of famous buildings, including the Parthenon, the Sydney Opera House, and the Bilbao Guggenheim. This introduction to computational number theory is centered on a number of problems that live at the interface of analytic, computational and Diophantine number theory, and provides a diverse collection of

techniques for solving number-theoretic problems. There are many exercises and open research problems included. Let $\{X_t : t \geq 0\}$ be a Markov process in \mathbb{R}^1 , and break up the path X_t into (random) component pieces consisting of the zero set ($\{t : X_t = 0\}$) and the "excursions away from 0," that is pieces of path X_t : $T \ni s \leq t$, with $X_s = X_t = 0$, but $X_u \neq 0$ for T . This book covers methods of Mathematical Morphology to model and simulate random sets and functions (scalar and multivariate). The introduced models concern many physical situations in heterogeneous media, where a probabilistic approach is required, like fracture statistics of materials, scaling up of permeability in porous media, electron microscopy images (including multispectral images), rough surfaces, multi-component composites, biological tissues, textures for image coding and synthesis. The common feature of these random structures is their domain of definition in n dimensions, requiring more general models than standard Stochastic Processes. The main topics of the book cover an introduction to the theory of random sets, random space tessellations, Boolean random sets and functions, space-time random sets and functions (Dead Leaves, Sequential Alternate models, Reaction-Diffusion), prediction of effective properties of random media, and probabilistic fracture theories. This book offers an excursion through the developmental area of research mathematics. It presents some 40 papers, published between the 1870s and the 1970s, on proofs

of the Cantor-Bernstein theorem and the related Bernstein division theorem. While the emphasis is placed on providing accurate proofs, similar to the originals, the discussion is broadened to include aspects that pertain to the methodology of the development of mathematics and to the philosophy of mathematics. Works of prominent mathematicians and logicians are reviewed, including Cantor, Dedekind, Schröder, Bernstein, Borel, Zermelo, Poincaré, Russell, Peano, the Königs, Hausdorff, Sierpinski, Tarski, Banach, Brouwer and several others mainly of the Polish and the Dutch schools. In its attempt to present a diachronic narrative of one mathematical topic, the book resembles Lakatos' celebrated book *Proofs and Refutations*. Indeed, some of the observations made by Lakatos are corroborated herein. The analogy between the two books is clearly anything but superficial, as the present book also offers new theoretical insights into the methodology of the development of mathematics (proof-processing), with implications for the historiography of mathematics. What kind of book is this? It is a book produced by a remarkable cultural circumstance in the former Soviet Union which fostered the creation of groups of students, teachers, and mathematicians called "mathematical circles". The work is predicated on the idea that studying mathematics can generate the same enthusiasm as playing a team sport - without necessarily being competitive. This book is intended for both students

and teachers who love mathematics and want to study its various branches beyond the limits of school curriculum. Developed for the liberal arts math course by a seasoned author team, *Mathematical Excursions*, is uniquely designed to help students see math at work in the contemporary world. Using the proven Aufmann Interactive Method, students learn to master problem-solving in meaningful contexts. In addition, multi-part Excursion exercises emphasize collaborative learning. The text's extensive topical coverage offers instructors flexibility in designing a course that meets their students' needs and curriculum requirements. The Excursions activity and corresponding Excursion Exercises, denoted by an icon, conclude each section, providing opportunities for in-class cooperative work, hands-on learning, and development of critical-thinking skills. These activities are also ideal for projects or extra credit assignments. The Excursions are designed to reinforce the material that has just been covered in the section in a fun and engaging manner that will enhance a student's journey and discovery of mathematics. The proven Aufmann Interactive Method ensures that students try concepts and manipulate real-life data as they progress through the material. Every objective contains at least one set of matched-pair examples. The method begins with a worked-out example with a solution in numerical and verbal formats to address different learning styles. The matched problem, called Check Your Progress, is left for

the student to try. Each problem includes a reference to a fully worked out solution in an appendix to which the student can refer for immediate feedback, concept reinforcement, identification of problem areas, and prevention of frustration. Eduspace, powered by Blackboard, for the Aufmann/Lockwood/Nation/CleggMath Excursions course features algorithmic exercises and test bank content in question pools. A comprehensive tour of leading mathematical ideas by an award-winning professor and columnist for the New York Times Opinionator series demonstrates how math intersects with philosophy, science and other aspects of everyday life. By the author of *The Calculus of Friendship*. 50,000 first printing. The book extends the high school curriculum and provides a backdrop for later study in calculus, modern algebra, numerical analysis, and complex variable theory. Exercises introduce many techniques and topics in the theory of equations, such as evolution and factorization of polynomials, solution of equations, interpolation, approximation, and congruences. The theory is not treated formally, but rather illustrated through examples. Over 300 problems drawn from journals, contests, and examinations test understanding, ingenuity, and skill. Each chapter ends with a list of hints; there are answers to many of the exercises and solutions to all of the problems. In addition, 69 "explorations" invite the reader to investigate research

problems and related topics. This book provides a comprehensive, in-depth overview of elementary mathematics as explored in Mathematical Olympiads around the world. It expands on topics usually encountered in high school and could even be used as preparation for a first-semester undergraduate course. This first volume covers Real Numbers, Functions, Real Analysis, Systems of Equations, Limits and Derivatives, and much more. As part of a collection, the book differs from other publications in this field by not being a mere selection of questions or a set of tips and tricks that applies to specific problems. It starts from the most basic theoretical principles, without being either too general or too axiomatic. Examples and problems are discussed only if they are helpful as applications of the theory. Propositions are proved in detail and subsequently applied to Olympic problems or to other problems at the Olympic level. The book also explores some of the hardest problems presented at National and International Mathematics Olympiads, as well as many essential theorems related to the content. An extensive Appendix offering hints on or full solutions for all difficult problems rounds out the book. The power and properties of numbers, from basic addition and sums of squares to cutting-edge theory We use addition on a daily basis—yet how many of us stop to truly consider the enormous and remarkable ramifications of this mathematical activity? *Summing It Up* uses addition as a springboard to present a

fascinating and accessible look at numbers and number theory, and how we apply beautiful numerical properties to answer math problems. Mathematicians Avner Ash and Robert Gross explore addition's most basic characteristics as well as the addition of squares and other powers before moving onward to infinite series, modular forms, and issues at the forefront of current mathematical research. Ash and Gross tailor their succinct and engaging investigations for math enthusiasts of all backgrounds. Employing college algebra, the first part of the book examines such questions as, can all positive numbers be written as a sum of four perfect squares? The second section of the book incorporates calculus and examines infinite series—long sums that can only be defined by the concept of limit, as in the example of $1+1/2+1/4+\dots=?$ With the help of some group theory and geometry, the third section ties together the first two parts of the book through a discussion of modular forms—the analytic functions on the upper half-plane of the complex numbers that have growth and transformation properties. Ash and Gross show how modular forms are indispensable in modern number theory, for example in the proof of Fermat's Last Theorem. Appropriate for numbers novices as well as college math majors, *Summing It Up* delves into mathematics that will enlighten anyone fascinated by numbers. This book provides a comprehensive, in-depth overview of elementary mathematics as explored in *Mathematical*

Olympiads around the world. It expands on topics usually encountered in high school and could even be used as preparation for a first-semester undergraduate course. This third and last volume covers Counting, Generating Functions, Graph Theory, Number Theory, Complex Numbers, Polynomials, and much more. As part of a collection, the book differs from other publications in this field by not being a mere selection of questions or a set of tips and tricks that applies to specific problems. It starts from the most basic theoretical principles, without being either too general or too axiomatic. Examples and problems are discussed only if they are helpful as applications of the theory. Propositions are proved in detail and subsequently applied to Olympic problems or to other problems at the Olympic level. The book also explores some of the hardest problems presented at National and International Mathematics Olympiads, as well as many essential theorems related to the content. An extensive Appendix offering hints on or full solutions for all difficult problems rounds out the book. This book explores the rich and elegant interplay between the two main currents of mathematics, the continuous and the discrete. Such fundamental notions in discrete mathematics as induction, recursion, combinatorics, number theory, discrete probability, and the algorithmic point of view as a unifying principle are continually explored as they interact with traditional calculus. A unique collection of competition problems

from over twenty major national and international mathematical competitions for high school students. Written for trainers and participants of contests of all levels up to the highest level, this will appeal to high school teachers conducting a mathematics club who need a range of simple to complex problems and to those instructors wishing to pose a "problem of the week", thus bringing a creative atmosphere into the classrooms. Equally, this is a must-have for individuals interested in solving difficult and challenging problems. Each chapter starts with typical examples illustrating the central concepts and is followed by a number of carefully selected problems and their solutions. Most of the solutions are complete, but some merely point to the road leading to the final solution. In addition to being a valuable resource of mathematical problems and solution strategies, this is the most complete training book on the market. "Disability and Academic Exclusion interrogates obstacles the disabled have encountered in education, from a historical perspective that begins with the denial of literacy to minorities in the colonial era to the later centuries' subsequent intolerance of writing, orality, and literacy mastered by former slaves, women, and the disabled. The text then questions where we stand today in regards to the university-wide rhetoric on promoting diversity and accommodating disability in the classroom." Amazon.com viewed 6/2/2020. For undergraduate courses in Liberal Arts Mathematics,

Quantitative Literacy, and General Education. NEW: Now with "Mini-Excursions" Included! These are enrichment topics that have been added at the end of each part and require an understanding of the core material covered in one or more of the chapters. Shorter than a full chapter but much more substantive than an appendix. Each mini-excursion includes its own exercise set. This very successful liberal arts mathematics textbook is a collection of "excursions" into the real-world applications of modern mathematics. The excursions are organized into four independent parts: 1) The Mathematics of Social Choice, 2) Management Science, 3) Growth and Symmetry, and 4) Statistics. Each part consists of four chapters plus a mini-excursion (new feature in 6/e). The book is written in an informal, very readable style, with pedagogical features that make the material both interesting and clear. The presentation is centered on an assortment of real-world examples and applications specifically chosen to illustrate the usefulness, relevance, and beauty of liberal arts mathematics. Challenge And Thrill Of Pre-College Mathematics Is An Unusual Enrichment Text For Mathematics Of Classes 9, 10, 11 And 12 For Use By Students And Teachers Who Are Not Content With The Average Level That Routine Text Dare Not Transcend In View Of Their Mass Clientele. It Covers Geometry, Algebra And Trigonometry Plus A Little Of Combinatorics. Number Theory And Probability. It Is Written Specifically For

The Top Half Whose Ambition Is To Excel And Rise To The Peak Without Finding The Journey A Forced Uphill Task. The Undercurrent Of The Book Is To Motivate The Student To Enjoy The Pleasures Of A Mathematical Pursuit And Of Problem Solving. More Than 300 Worked Out Problems (Several Of Them From National And International Olympiads) Share With The Student The Strategy, The Excitement, Motivation, Modeling, Manipulation, Abstraction, Notation And Ingenuity That Together Make Mathematics. This Would Be The Starting Point For The Student, Of A Life-Long Friendship With A Sound Mathematical Way Of Thinking. There Are Two Reasons Why The Book Should Be In The Hands Of Every School Or College Student, (Whether He Belongs To A Mathematics Stream Or Not) One, If He Likes Mathematics And, Two, If He Does Not Like Mathematics- The Former, So That The Cramped Robot-Type Treatment In The Classroom Does Not Make Him Into The Latter; And The Latter So That By The Time He Is Halfway Through The Book, He Will Invite Himself Into The Former. Excursions in Classical Analysis will introduce students to advanced problem solving and undergraduate research in two ways: it will provide a tour of classical analysis, showcasing a wide variety of problems that are placed in historical context, and it will help students gain mastery of mathematical discovery and proof. The [Author]; presents a variety of solutions for the problems in the book. Some solutions reach back to

the work of mathematicians like Leonhard Euler while others connect to other beautiful parts of mathematics. Readers will frequently see problems solved by using an idea that, at first glance, might not even seem to apply to that problem. Other solutions employ a specific technique that can be used to solve many different kinds of problems. Excursions emphasizes the rich and elegant interplay between continuous and discrete mathematics by applying induction, recursion, and combinatorics to traditional problems in classical analysis. The book will be useful in students' preparations for mathematics competitions, in undergraduate reading courses and seminars, and in analysis courses as a supplement. The book is also ideal for self study, since the chapters are independent of one another and may be read in any order. This book provides a comprehensive, in-depth overview of elementary mathematics as explored in Mathematical Olympiads around the world. It expands on topics usually encountered in high school and could even be used as preparation for a first-semester undergraduate course. This second volume covers Plane Geometry, Trigonometry, Space Geometry, Vectors in the Plane, Solids and much more. As part of a collection, the book differs from other publications in this field by not being a mere selection of questions or a set of tips and tricks that applies to specific problems. It starts from the most basic theoretical principles, without being either too general or too axiomatic. Examples and problems

are discussed only if they are helpful as applications of the theory. Propositions are proved in detail and subsequently applied to Olympic problems or to other problems at the Olympic level. The book also explores some of the hardest problems presented at National and International Mathematics Olympiads, as well as many essential theorems related to the content. An extensive Appendix offering hints on or full solutions for all difficult problems rounds out the book.

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