AOPS ALGEBRA PROBLEMS

AOPS ALGEBRA PROBLEMS represent a challenging and enriching category of mathematical exercises designed to enhance problem-solving skills and deepen understanding of algebraic concepts. These problems originate from the Art of Problem Solving (AoPS) community, known for its rigorous approach to mathematics education. Engaging with aops algebra problems helps students develop critical thinking abilities and prepares them for competitive exams and advanced studies. This article explores various types of aops algebra problems, effective strategies for solving them, and resources to aid learners in mastering these complex challenges. Whether tackling polynomial equations, inequalities, or functional equations, understanding the nuances of AoPS-style algebra problems is essential for mathematical growth. The following sections provide a comprehensive overview, guiding readers through the fundamental concepts and advanced techniques necessary for success.

Overview of AoPS Algebra Problems

AoPS algebra problems are designed to challenge students beyond standard textbook exercises, encouraging deeper analytical thinking and creativity. The problems often require multi-step reasoning, integration of various algebraic principles, and the application of problem-solving heuristics. These problems are commonly encountered in math competitions such as Math Olympiads and AMC contests, making them an ideal preparation tool for aspiring mathematicians. AoPS problems emphasize understanding the underlying structure of algebraic expressions and equations rather than rote memorization of formulas. By solving these problems, learners gain proficiency in topics like polynomial manipulation, systems of equations, inequalities, and functional equations. The complexity and variety of aops algebra problems make them a valuable resource for students seeking to improve their mathematical rigor.

Types of AoPS Algebra Problems

Aops algebra problems span a wide range of topics and formats, each requiring different approaches and techniques. Some of the most common types include polynomial problems, inequality challenges, systems of equations, and functional equations. Each category tests specific skills and concepts, ensuring a comprehensive understanding of algebra.

Polynomial Problems

Polynomial problems often involve factoring, root-finding, and manipulation of expressions. These problems may require using the Rational Root Theorem, synthetic division, or the Factor Theorem. Some problems explore the relationships between coefficients and roots or involve constructing polynomials with given properties.

Inequality Challenges

These problems focus on proving or finding bounds for algebraic expressions. Techniques such as AM-GM inequality, Cauchy-Schwarz inequality, and rearrangement inequality are frequently employed. Inequality problems train students to work with both strict and non-strict inequalities and to handle absolute values and quadratic forms.

Systems of Equations

Systems problems require solving multiple equations simultaneously, often nonlinear or involving parameters. Methods include substitution, elimination, and the use of symmetric sums. Some problems extend to systems with integer solutions or involve parametric conditions that add complexity.

Functional Equations

Functional equations challenge students to find all functions satisfying given conditions. Solutions typically involve testing particular values, analyzing injectivity or surjectivity, and exploiting symmetry or periodicity. Functional equations develop a deeper understanding of function properties and algebraic structures.

Strategies for Solving AoPS Algebra Problems

Effective strategies are crucial for tackling the diverse nature of aops algebra problems. Successful problem solving combines algebraic manipulation, logical deduction, and creative insight. Developing a systematic approach helps improve accuracy and efficiency.

Understanding the Problem

Carefully reading and interpreting the problem statement is the first step. Identifying knowns, unknowns, and the goal clarifies the problem's scope. Restating the problem in simpler terms can reveal hidden relationships.

Exploring Examples and Patterns

Testing specific values or simpler cases often uncovers patterns or counterexamples. This exploration can guide conjectures about the solution or suggest applicable theorems.

Algebraic Manipulation

Skillful manipulation of expressions is essential. Techniques include factoring, expanding, substituting variables, and rewriting expressions in alternative forms. These manipulations often simplify complex problems into manageable parts.

Applying Theorems and Inequalities

Many aops algebra problems rely on classical theorems and inequalities. Recognizing when to apply these tools can streamline solutions and provide rigorous proofs.

Writing Clear and Logical Solutions

Presenting a coherent argument with justified steps ensures the solution is both correct and understandable. Clear notation and explicit reasoning are key components.

Common Mistakes and How to Avoid Them

Students often encounter pitfalls when working on aops algebra problems. Awareness of these common errors can improve problem-solving effectiveness and accuracy.

- **Misreading the Problem:** Overlooking conditions or misinterpreting the question can lead to incorrect solutions. Careful reading and annotation help prevent this.
- **Ignoring Domain Restrictions:** Failure to consider variable domains or extraneous solutions may invalidate answers.
- **Overcomplicating the Problem:** Introducing unnecessary complexity can obscure simpler paths to the solution.
- **Skipping Steps:** Omitting intermediate steps can result in logical gaps or errors.
- **Incorrect Application of Theorems:** Applying theorems without verifying conditions can lead to false conclusions.

Resources for Practicing AoPS Algebra Problems

Access to quality resources is vital for mastering aops algebra problems. A variety of books, online platforms, and forums support students in developing skills and receiving feedback.

AoPS Online Community and Classes

The AoPS website offers an extensive collection of algebra problems, discussion forums, and instructional classes tailored to different skill levels. These resources provide interactive learning and expert guidance.

Problem Books and Collections

Several problem books compile AoPS-style algebra problems, including challenge problems from past competitions. These books offer structured practice and detailed solutions to aid understanding.

Math Competition Archives

Past contest problems from AMC, AIME, and other competitions are valuable practice materials. They expose students to a wide range of problem types and difficulty levels.

Online Math Forums

Forums dedicated to mathematics, such as Art of Problem Solving's own community, allow learners to discuss problems, share solutions, and gain insights from peers and experts.

Frequently Asked Questions

What are some effective strategies for solving AoPS algebra problems?

Effective strategies include mastering fundamental algebraic techniques, practicing problem decomposition, recognizing patterns, and consistently solving a variety of problems to build intuition and flexibility.

How does AoPS algebra differ from standard algebra curricula?

AoPS algebra emphasizes problem-solving skills, deep conceptual understanding, and challenging problems that often require creative approaches beyond routine procedures found in standard curricula.

Can beginners use AoPS algebra problems, or are they only for advanced students?

Beginners can use AoPS algebra problems as the books and courses are designed with a progression in difficulty, allowing learners to build foundational skills before tackling more advanced challenges.

What resources does AoPS provide to help with algebra problem-solving?

AoPS offers textbooks, online classes, an interactive community forum, problem sets with detailed solutions, and the Alcumus platform for personalized practice and feedback.

How can I improve my speed and accuracy on AoPS algebra problems?

Improving speed and accuracy involves regular timed practice, reviewing solutions thoroughly, learning common problem-solving techniques, and identifying and addressing personal weaknesses.

Are AoPS algebra problems useful for math competitions?

Yes, AoPS algebra problems are highly relevant for math competitions such as AMC, AIME, and Math Olympiads, as they develop critical thinking and problem-solving skills needed for these contests.

Additional Resources

1. *Introduction to Algebra*
This book by Richard Rusczyk, founder of Art of Problem Solving (AoPS), offers a thorough introduction to algebra concepts with an emphasis on problem-solving techniques. It covers topics from basic equations to more advanced subjects like inequalities and functions. The book is designed for students preparing for math competitions and looking to deepen their understanding of algebra.

2. *Intermediate Algebra*
Also part of the AoPS series, Intermediate Algebra builds on foundational concepts and explores more complex algebraic ideas such as polynomials, rational expressions, and radicals. The problems are challenging and designed to develop critical thinking skills necessary for competitive math. This book is ideal for students who have completed Introduction to Algebra and want to advance their problem-solving abilities.

3. *Algebra Through Practice: Volume 1*
This book, inspired by problem-solving approaches similar to AoPS, provides a collection of algebra problems with detailed solutions. It emphasizes understanding underlying principles rather than rote memorization. Suitable for high school students and competition participants, it helps develop a deeper conceptual grasp of algebra.

4. *Competition Math for Middle School*
Written by Jason Batterson, this book complements AoPS algebra materials by targeting middle school students competing in math contests. It covers a broad range of algebra topics through problems and explanations that encourage strategic thinking. The book helps students build confidence and skills for contests like Mathcounts and AMC 8.

5. *Art of Problem Solving Volume 2: And Beyond*
This advanced AoPS book covers a wide range of topics including algebra, number theory, and combinatorics, with a strong focus on higher-level problem solving. It is designed for students who have mastered the basics and want to tackle more challenging competition problems. The algebra sections challenge readers to apply concepts creatively and rigorously.

6. *Algebra Problem Solver*
This comprehensive guide offers detailed step-by-step solutions to a variety of algebra problems, similar in style to AoPS problem explanations. It is useful for self-study and for students seeking to improve their algebraic manipulation and problem-solving skills. The book includes problems ranging from simple equations to complex polynomial challenges.

7. *Introduction to Counting & Probability*
While not solely focused on algebra, this AoPS text integrates algebraic techniques within counting and probability problems, highlighting the interconnectedness of these areas. It is essential for students preparing for math competitions where algebraic reasoning is applied in combinatorial contexts. The book fosters creativity and logical thinking through diverse problem sets.

8. *Prealgebra*
Part of the AoPS curriculum, Prealgebra lays the groundwork for algebra by introducing fundamental arithmetic and basic algebraic concepts. The book includes engaging problems that develop logical reasoning and prepare students for the challenges of formal algebra study. It is perfect for beginners aiming to build a strong math foundation.

9. *Algebra: Structure and Method, Book 1*
A classic algebra textbook widely used for competitive math preparation, this book emphasizes clear explanations and a variety of problem types. It covers fundamental algebraic topics and includes numerous exercises that align well with AoPS problem-solving philosophy. The structured approach helps students systematically develop algebra skills.

Aops Algebra Problems

aops algebra problems: The Well-Trained Mind Susan Wise Bauer, Jessie Wise, 2016-08-09 Is your child getting lost in the system, becoming bored, losing his or her natural eagerness to learn? If so, it may be time to take charge of your child's education—by doing it yourself. The Well-Trained Mind will instruct you, step by step, on how to give your child an academically rigorous, comprehensive education from preschool through high school—one that will train him or her to read,

to think, to understand, to be well-rounded and curious about learning. Veteran home educators Susan Wise Bauer and Jessie Wise outline the classical pattern of education called the trivium, which organizes learning around the maturing capacity of the child's mind and comprises three stages: the elementary school "grammar stage," when the building blocks of information are absorbed through memorization and rules; the middle school "logic stage," in which the student begins to think more analytically; and the high-school "rhetoric stage," where the student learns to write and speak with force and originality. Using this theory as your model, you'll be able to instruct your child—whether full-time or as a supplement to classroom education—in all levels of reading, writing, history, geography, mathematics, science, foreign languages, rhetoric, logic, art, and music, regardless of your own aptitude in those subjects. Thousands of parents and teachers have already used the detailed book lists and methods described in The Well-Trained Mind to create a truly superior education for the children in their care. This extensively revised fourth edition contains completely updated curricula and book lists, links to an entirely new set of online resources, new material on teaching children with learning challenges, cutting-edge math and sciences recommendations, answers to common questions about home education, and advice on practical matters such as standardized testing, working with your local school board, designing a high-school program, preparing transcripts, and applying to colleges. You do have control over what and how your child learns. The Well-Trained Mind will give you the tools you'll need to teach your child with confidence and success.

aops algebra problems: *Wearing Gauss's Jersey* Dean Hathout, 2013-05-01 Wearing Gauss's Jersey focuses on Gauss problems, problems that can be very tedious and time consuming when tackled in a traditional, straightforward way but if approached in a more insightful fashion, can yield the solution much more easily and elegantly. The book shows how mathematical problem solving can be fun and how students can improve the

aops algebra problems: *Homeschooling For Dummies* Jennifer Kaufeld, 2020-08-06 Homeschool with confidence with help from this book Curious about homeschooling? Ready to jump in? Homeschooling For Dummies, 2nd Edition provides parents with a thorough overview of why and how to homeschool. One of the fastest growing trends in American education, homeschooling has risen by more than 61% over the last decade. This book is packed with practical advice and straightforward guidance for rocking the homeschooling game. From setting up an education space, selecting a curriculum, and creating a daily schedule to connecting with other homeschoolers in your community Homeschooling For Dummies has you covered. Homeschooling For Dummies, 2nd Edition is packed with everything you need to create the homeschool experience you want for your family, including: Deciding if homeschooling is right for you Developing curricula for different grade levels and abilities Organizing and allocating finances Creating and/or joining a homeschooling community Encouraging socialization Special concerns for children with unique needs Perfect for any current or aspiring homeschoolers, Homeschooling For Dummies, 2nd Edition belongs on the bookshelf of anyone with even a passing interest in homeschooling as an alternative to or supplement for traditional education.

aops algebra problems: Eccentric Variables. Literally and Figuratively Cornéliu Tocan, 2021-12-01

aops algebra problems: Articles and Excerpts, Volume 1 AoPS Incorporated, 2006

aops algebra problems: How to Make Sure Your Child Gets an A+ in Math Shu Chen Hou, Unlock Your Child's Full Math Potential and Secure Their Academic Success! Are you concerned about your child's math performance? Do you want to see them not just pass but excel in this critical subject? How to Make Sure Your Child Gets an A+ in Math is your ultimate guide to transforming your child into a math champion! This groundbreaking book takes you on a journey through the world of math education, offering invaluable insights, proven strategies, and expert advice to ensure your child's success. From building a strong math foundation to mastering effective study techniques, this book covers it all. Discover how to: Instill a growth mindset to boost confidence and motivation. Navigate the intricacies of the math curriculum at every grade level. Support your

child's learning journey with effective communication and collaboration with teachers. Equip them with winning exam strategies to outperform their peers. With real-life case studies and success stories, you'll witness firsthand the transformation that can happen when you apply these techniques. Plus, you'll find essential resources for additional help, math competitions, and long-term career planning in mathematics. Don't let your child struggle with math when they can shine! Invest in their academic future today with How to Make Sure Your Child Gets an A+ in Math. Give your child the confidence, knowledge, and skills to conquer the world of math and secure a bright future. Order now and watch them rise to the top of the class!

aops algebra problems: The William Lowell Putnam Mathematical Competition 2001–2016: Problems, Solutions, and Commentary Kiran S. Kedlaya, Daniel M. Kane, Jonathan M. Kane, Evan M. O'Dorney, 2020-11-05 The William Lowell Putnam Mathematics Competition is the most prestigious undergraduate mathematics problem-solving contest in North America, with thousands of students taking part every year. This volume presents the contest problems for the years 2001–2016. The heart of the book is the solutions; these include multiple approaches, drawn from many sources, plus insights into navigating from the problem statement to a solution. There is also a section of hints, to encourage readers to engage deeply with the problems before consulting the solutions. The authors have a distinguished history of engagement with, and preparation of students for, the Putnam and other mathematical competitions. Collectively they have been named Putnam Fellow (top five finisher) ten times. Kiran Kedlaya also maintains the online Putnam Archive.

aops algebra problems: Artificial Intelligence in Education Technologies: New Development and Innovative Practices Tim Schlippe, Eric C. K. Cheng, Tianchong Wang, 2024-12-31 This book is a collection of selected research papers presented at the 2024 5th International Conference on Artificial Intelligence in Education Technology (AIET 2024), held in Barcelona, Spain, on July 29 - 31, 2024. AIET establishes a platform for AI in education researchers to present research, exchange innovative ideas, propose new models, as well as demonstrate advanced methodologies and novel systems. It is a timely and up-to-date publication responsive to the rapid development of AI technologies, practices and their increasingly complex interplay with the education domain. It promotes the cross-fertilisation of knowledge and ideas from researchers in various fields to construct the interdisciplinary research area of AI in Education. These subject areas include computer science, cognitive science, education, learning sciences, educational technology, psychology, philosophy, sociology, anthropology and linguistics. The feature of this book will contribute from diverse perspectives to form a dynamic picture of AI in Education. It also includes various domain-specific areas for which AI and other education technology systems have been designed or used in an attempt to address challenges and transform educational practice. Education stands as a cornerstone for societal progress, and ensuring universal access to quality education is integral to achieving Goal 4 of the United Nations' Sustainable Development Goals (SDGs). The goal is to ensure inclusive and equitable quality education for all by 2030. This involves not only expanding access to education but also improving the quality of education to promote lifelong learning opportunities. AI has the potential to significantly contribute to the achievement of Goal 4. It is committed to exploring how AI may play a role in bringing more innovative practices, transforming education, and triggering an exponential leap towards the achievement of the Education 2030 Agenda. Providing broad coverage of recent technology-driven advances and addressing a number of learning-centric themes, the book is an informative and useful resource for researchers, practitioners, education leaders and policy-makers who are involved or interested in AI and education.

aops algebra problems: Prealgebra Richard Rusczyk, David Patrick, Ravi Bopu Boppana, 2011-08 Prealgebra prepares students for the rigors of algebra, and also teaches students problem-solving techniques to prepare them for prestigious middle school math contests such as MATHCOUNTS, MOEMS, and the AMC 8.Topics covered in the book include the properties of arithmetic, exponents, primes and divisors, fractions, equations and inequalities, decimals, ratios and proportions, unit conversions and rates, percents, square roots, basic geometry (angles,

perimeter, area, triangles, and quadrilaterals), statistics, counting and probability, and more!The text is structured to inspire the reader to explore and develop new ideas. Each section starts with problems, giving the student a chance to solve them without help before proceeding. The text then includes solutions to these problems, through which algebraic techniques are taught. Important facts and powerful problem solving approaches are highlighted throughout the text. In addition to the instructional material, the book contains well over 1000 problems. The solutions manual contains full solutions to all of the problems, not just answers.

aops algebra problems: Puzzle and Proof Samuel Dittmer, Hiram Golze, Grant Molnar, Caleb Stanford, 2024-08-13 Puzzle and Proof: A Decade of Problems from the Utah Math Olympiad is a compilation of the problems and solutions for the first 10 years of the Utah Math Olympiad. The problems are challenging but should be understandable at a high school level. Besides putting all problems in one place (70 in total), which have not previously appeared in print, the book provides additional inspiration for many of the problems and will contain the first published solutions for 10 problems that were originally published on the contest flyer. The book will be a fantastic resource for anyone who enjoys mathematical and/or logic puzzles or is interested in studying for mathematics competitions. Features 70 carefully designed, high-quality high-school level math proof problems, with full solutions Detailed pictures and diagrams throughout to aid understanding Suitable for anyone with high school-level mathematics skills with an interest in furthering their understanding, or just enjoying the puzzles Solutions in the back of the book, sorting the problems by difficulty and topic.

aops algebra problems: *Introduction to Algebra Solution Manual* Richard Rusczyk, 2009

aops algebra problems: Precalculus Richard Rusczyk, 2014-10-10 Precalculus is part of the acclaimed Art of Problem Solving curriculum designed to challenge high-performing middle and high school students. Precalculus covers trigonometry, complex numbers, vectors, and matrices. It includes nearly 1000 problems, ranging from routine exercises to extremely challenging problems drawn from major mathematics competitions such as the American Invitational Mathematics Exam and the US Mathematical Olympiad. Almost half of the problems have full, detailed solutions in the text, and the rest have full solutions in the accompanying Solutions Manual--back cover.

aops algebra problems: Prealgebra Solutions Manual Richard Rusczyk, David Patrick, Ravi Bopu Boppana, 2011-08

aops algebra problems: Variables excentriques... au propre et au figuré Cornéliu Tocan, 2020-05-05 L’ouvrage est un plaidoyer auprès des enseignants de mathématiques (tant au niveau primaire qu'au secondaire) – ces tenaces timoniers de destins professionnels, qui, pour des décennies, naviguent sur les océans du savoir – et aussi bien auprès des participants aux olympiades de mathématiques et des élèves doués – les intrépides explorateurs intellectuels qui poussent quotidiennement les frontières de la cognition. En changeant de cap pour s’approcher de cette prometteuse méthode didactique, ils entraîneront dans leur sillage les matheux, les amants des mathématiques, les gens carburés par la curiosité intellectuelle, les esprits cartésiens. Le livre est un enrichissement pratique et utile pour tous les élèves de tous les niveaux et leurs parents. Le devancement de la matière est l’un des avantages immédiats de cette approche didactique, avec des effets pédagogiques rapides et bénéfiques. Ainsi, les élèves avancés peuvent se familiariser avec de la matière supérieure à leur niveau officiel, les élèves ayant compris et maîtrisé la matière en cours ont l’occasion d’explorer des notions des années futures – à titre d’enrichissement ou de méthode alternative, tout en exploitant les acquis du présent –, tandis que les élèves découragés et ayant des pensées de décrochage (se) démontrent qu’ils sont capables de résoudre des exercices des années à venir, ce que leur permettrait de rebâtir leur estime de soi, de gagner de la confiance et d’acquérir la motivation nécessaire pour persévérer. En respectant la bien connue doctrine pédagogique « chacun à son rythme », l’estime de soi et la motivation des élèves seront grandissantes. Tout parent serait content de l’enseignement dispensé à l’école, en étant extrêmement fier d’apprendre que sa progéniture est capable de résoudre des exercices de niveau plus avancé. Témoignages Camp de mathématiques 21-25 juin 2019 Polytechnique Montréal Association Mathématique du Québec –

participants rencontrés en 2019 – ▼▼▼ Je suis très impressionné par tout l'effort que l'auteur a mis dans son livre. Je crois que ses motivations sont celles d'un chercheur scientifique, de quelqu'un qui veut comprendre et veut partager sa solution élégante. Particulièrement en mathématiques, on peut être guidés par l'élégance, comme le disait G. H. Hardy. Prof. Marc Laforest, Ph. D. Département de mathématiques et de génie industriel Polytechnique Montréal ▼▼▼ À travers ma lecture sur la résolution de problèmes avec les variables excentriques, j'ai appris une nouvelle et superbe façon de penser autrement et logiquement avec une abondance d'applications concrètes. La beauté des variables excentriques, c'est que c'est une approche facile à comprendre qui est même utile à l'école et dans les concours de mathématiques! Je conseille la lecture à des étudiants autant jeunes que vieux, qui aimeraient explorer les mathématiques et pousser leurs capacités de résoudre des problèmes difficiles. Je conseille aussi cette lecture aux professeurs de mathématiques qui pourront montrer cette technique à leurs étudiants ayant de la difficulté à résoudre des problèmes de la façon «traditionnelle». John Bramos – Collège Sainte-Anne, Montréal participant à des concours de mathématiques (AQJM, Opti-Math, AMQ, Pascal, Pythagore, Fibonacci) ▼▼▼ Une belle œuvre mathématique qui nourrit les jeunes où ils ont le plus besoin. Le livre simplifie des concepts algébriques en définissant des variables reposant sur une agréable symétrie. Intégrer les variables excentriques dans les programmes du secondaire pour donner suite à l'enseignement de l'algèbre pourrait briser l'inertie psychologique du choix traditionnel d'une variable dans un problème mathématique afin de pousser les frontières de la norme algébrique imposée par le système d'éducation du secondaire. Pour ma part, je recommande cette source de savoir à toute personne désirant remettre en question l'enseignement traditionnel de l'algèbre ou à ceux qui veulent tout simplement mieux performer dans des concours de mathématiques. Rami Ghantous – Collège Jean-de-Brébeuf et Collège Beaubois, Montréal Participant à des concours mathématiques (AMQ, Thalès, Gauss, Euclide, Fermat) ▼▼▼ Ce livre présente un concept pratique et simple qui permet de voir sous un nouvel angle plusieurs types de calculs. En plus de rendre certains problèmes d'algèbre, plus avancés, accessibles plus tôt dans le cursus, les variables excentriques montrent un aspect plus créatif des mathématiques, chose qui n'est pas assez présente dans les cours de cette matière dispensés à l'école. L'utilisation des variables excentriques devrait être enseignée non seulement pour donner un autre outil pour la résolution de certains problèmes, mais également pour montrer aux élèves que l'on peut toujours sortir des sentiers battus, même en mathématiques. Lynda Khalfoun – Collège Jésus-Marie de Sillery, Québec participante à des concours de mathématiques (AQJM, AMQ) ▼▼▼ Tout au long de ma lecture de ce livre, je me suis retrouvé à être de plus en plus fasciné par les variables excentriques et toutes les utilités qui y sont rattachées. Il est rare de trouver un ouvrage qui montre une nouvelle méthode de résolution de problèmes, autant agréable que facile à lire. Si j'étais tombé sur un livre comme celui-ci au secondaire, mes professeurs de mathématiques n'auraient jamais arrêté d'en entendre parler, puisque – adorant trouver de nouvelles solutions à chaque problème – j'aurais eu les variables excentriques comme nouvel outil. Maintenant que je les ai découvertes, il est certain que je vais me mettre à les utiliser. De plus, étant avide de concours de mathématiques, je passe beaucoup de temps à étudier de nouvelles formules ou apprendre des techniques pour aller plus vite, tout en faisant le moins d'erreur de calculs. J'ai maintenant une excellente méthode que je compte mettre à profit, puisque, en plus d'être intuitive, elle simplifie grandement certains calculs. Marc-Antoine Mongrain Collège Jean-Eudes et Collège Jean-de-Brébeuf, Montréal Participant à des concours de mathématiques (AQJM, AMQ, AMC, CCMS, Opti-Math, Purple Comet, Thalès, Byron-Germain, Fibonacci, Pythagore, Gauss, Pascal, Cayley, Fermat, Euclide, camp de l'université d'Ottawa) ▼▼▼ À travers ce livre, l'auteur nous fait découvrir l'utilité et la créativité des variables excentriques, et la résolution des problèmes avec celles-ci. La lecture de ce livre fut extrêmement agréable, car j'étais en train de découvrir des méthodes de résolutions de problèmes créativement différentes par rapport à celles apprises à l'école. Notamment les résolutions appelées « hors des sentiers battus » m'ont émerveillée avec leur simplicité de compréhension et leur élégance. En deuxième et troisième du secondaire, j'aurais été ravie d'avoir lu ce livre ou de m'avoir enseigné ce sujet dans mes classes, puisque l'utilisation des

variables excentriques ne nécessite pas de notions plus avancées que l'algèbre de base, mais permet toutefois de résoudre autant, et même plus, de problèmes qu'avec des notions plus complexes apprises à la fin du secondaire. Je recommande ce livre à tous et à toutes les avides enthousiastes des mathématiques, et même à ceux qui ne le sont pas. Anna Shi – Collège Sainte-Anne, Montréal participante à des concours de mathématiques (AMQ, COMC, AQJM, AMC, Opti-Math) ▼▼▼ Après ma lecture, j'ai découvert qu'il y avait plusieurs méthodes simples et efficaces pour résoudre des questions difficiles. Malgré la simplicité du sujet, il s'avère extrêmement utile pour tout problème et sert très bien de base pour des concours de mathématiques. C'est la beauté des variables excentriques! Ce livre approfondit aussi beaucoup nos connaissances envers ce sujet, que l'école n'enseigne malheureusement pas. Je crois certainement que ce concept vaudrait la peine d'être enseigné au secondaire, parce ce qu'il développerait la pensée mathématique. Leo Shi – Collège Jean-de-Brébeuf, Montréal participant à des concours de mathématiques (COMC, CMO, Gauss, Pascal, Fryer, CIMC, Kangaroo, AMC 10, Mathematica, AMQ, AQJM, Opti-Math) ▼▼▼ On nous présente une méthode qui est à connaître par tous les avides de mathématiques au niveau d'olympiade. Les variables excentriques représentent une manière élégante de simplifier des problèmes complexes et elles sont adroitement explorées pour plusieurs branches mathématiques. Leo Vanciu – Collège Jean de la Mennais, Montréal participant à des concours de mathématiques (AMQ, COMC, Formula of Unity, AQJM, AMC, Kangaroo, Cayley, Fermat, Galois, Russian Tournament of the Towns) • • • ▼▼▼ J'admire dans cette œuvre la passion et la sincérité de l'auteur par rapport au sujet, ce qui permet aux lecteurs d'avoir une compréhension plus aisée des variables excentriques. Faisant partie des gens avec une facilité en mathématiques, je suis d'avis que chacun devrait avoir la possibilité d'apprendre des notions à leur niveau et à leur rythme. Je crois que cet ouvrage en est la clé. J'aurais bien aimé apprendre ces notions en classe; je suis ravie d'avoir pris connaissance d'un nouvel outil mathématique. • • • ▼▼▼ Kassandra Roberge – Collège Jésus-Marie de Sillery, Québec participante à des concours de mathématiques (AQJM, AMQ, Gauss, Fryer, Galois, Hypathia, Euclid) ▼▼▼ Enseigner, c'est outiller intellectuellement. Ce que propose ici Cornéliu Tocan est une remarquable clé à molette mathématique, un outil polyvalent capable d'affronter efficacement une grande variété de problèmes. Mais avant tout, comme les méthodes proposées reposent sur la symétrie, notion intimement liée à l'esthétique, ces pages regorgent d'une qualité ô combien désirable: l'élégance. Luc Tremblay, enseignant de mathématiques Collège Jésus-Marie de Sillery, Québec • • • ▼▼▼ J'ai parcouru l'ouvrage « Variables excentriques » avec beaucoup d'enthousiasme. Cela m'a rappelé de nombreux souvenirs de secondaire et du cégep, par l'introduction graduelle des notions et par les démonstrations détaillées et pas à pas des solutions. C'est une approche didactique originale de plusieurs méthodes basées sur la même notation, offrant des applications inédites. Enseignée au secondaire, la technique des variables excentriques pourrait aider des élèves en difficulté ou bien susciter la curiosité des élèves les plus aguerris en mathématiques. C'est un bon travail de recherche et de vulgarisation. Jean-Philippe Grenier, actuaire Morneau Shepell, Québec

aops algebra problems: Variabile excentrice... la propriu și la figurat Cornéliu Tocan, 2021-04-01 Cartea reprezintă o pledoarie față de învățătorii și profesorii de matematică (de nivel primar, gimnazial și liceal) – acești tenaci timonieri de destine profesionale care navighează de decenii pe oceanele cunoașterii – precum și față de participanții la olimpiade de matematică și elevii dotați – intrepizii exploratori intelectuali care împing zilnic frontierele cogniției. Schimbând de cap pentru a se apropia de această promițătoare metodă de predare, aceștia vor atrage în siajul lor pe cei buni la matematică, matleții, îndrăgostiții de matematică, persoanele animate de curiozitate intelectuală, mințile carteziene. Cartea este un instrument practic și util de îmbogățire intelectuală pentru elevii de toate nivelurile și pentru părinții lor. Astfel, respectând ritmul fiecăruia și al tuturor, elevii avansați se pot familiariza cu noțiuni depășind nivelul lor oficial, elevii care au înțeles și și-au însușit materia curentă au oportunitatea de a explora concepte din anii superiori – ca îmbogățire sau ca metode alternative, exploatând cunoștințele acumulate în prezent –, iar elevii descurajați și cu gânduri de abandon pot tatona această nouă abordare pentru a(-și) demonstra că sunt capabili să

rezolve exerciții din anii următori, ceea ce ar contribui la reclădirea stimei de sine și la dobândirea motivației necesare pentru a persevera. Orice părinte ar fi mulțumit de educația oferită în școală și ar fi extrem de mândru aflând că progenitura sa este capabilă să rezolve exerciții la un nivel mai avansat.

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