

axler linear algebra done right

Axler Linear Algebra Done Right: A Comprehensive Guide for Students and Professionals

Introduction:

Are you grappling with the complexities of linear algebra? Do you find traditional textbooks overly cumbersome and lacking in intuitive explanations? Then you've come to the right place. This comprehensive guide delves into Sheldon Axler's renowned text, "Linear Algebra Done Right," dissecting its strengths, weaknesses, and offering valuable insights to help you master this crucial mathematical subject. We'll explore the book's structure, its unique approach, and how to best utilize it to achieve a deep understanding of linear algebra. This post is designed to be your ultimate resource for navigating the world of Axler's Linear Algebra Done Right, ensuring you get the most out of your learning experience. Whether you're a student tackling the subject for the first time or a professional looking to refresh your knowledge, this guide will provide invaluable support.

Why Axler's "Linear Algebra Done Right" Stands Out:

Unlike many linear algebra textbooks that introduce concepts through matrices before delving into the abstract vector space theory, Axler takes a different, often praised, approach. He starts with the core concepts of vector spaces and linear transformations, building a solid theoretical foundation before introducing matrices. This approach, while initially challenging for some, ultimately leads to a deeper and more intuitive understanding of the subject.

Key Features and Strengths of Axler's Approach:

Emphasis on Conceptual Understanding: Axler prioritizes conceptual understanding over rote memorization. He encourages readers to think critically about the underlying principles of linear algebra, fostering a deeper appreciation of the subject's elegance and power.

Clear and Concise Writing Style: Axler's writing style is known for its clarity and precision. He avoids unnecessary jargon and explains concepts in a straightforward, accessible manner, making the text manageable even for those without a strong mathematical background.

Focus on Linear Transformations: The book rightly emphasizes linear transformations as the central objects of study. This approach helps students develop a more holistic understanding of the subject, showing how matrices are merely a representation of these transformations.

Rigorous Treatment of the Subject: While accessible, Axler's text maintains mathematical rigor. This helps students develop a strong foundation for more advanced mathematical studies.

Innovative Problem Sets: The exercises are carefully selected to challenge students and deepen their understanding, moving beyond simple calculations to encourage problem-solving and critical thinking.

Potential Challenges and How to Overcome Them:

While Axler's approach offers many advantages, some students might initially find it challenging.

Abstract Nature of the Approach: The abstract nature of the initial chapters can be daunting for those accustomed to a more concrete, matrix-focused introduction to linear algebra. Perseverance is key; the payoff in deeper understanding is substantial.

Rigor Demands Effort: The rigorous treatment demands careful reading and a willingness to grapple with abstract concepts. Don't be afraid to reread sections multiple times and work through the examples slowly.

Limited Numerical Examples: The book contains fewer numerical examples than some traditional textbooks. Supplementing the book with additional practice problems or online resources can be beneficial.

Effective Strategies for Mastering Axler's "Linear Algebra Done Right":

Active Reading: Don't just passively read the text; actively engage with the material. Work through examples, try to prove theorems on your own before reading the proof, and actively formulate your own questions.

Collaborative Learning: Discuss concepts with fellow students or a tutor. Explaining the material to someone else can solidify your understanding.

Seek Supplemental Resources: Utilize online resources, such as lecture notes, videos, or practice problems, to reinforce your learning.

Focus on Understanding, Not Memorization: Emphasize understanding the underlying principles rather than memorizing formulas or procedures.

Detailed Outline of Axler's "Linear Algebra Done Right":

Title: Linear Algebra Done Right

Outline:

Introduction: Setting the stage for the abstract approach, introducing basic set theory notation.

Chapter 1: Vector Spaces: Definition and examples of vector spaces, subspaces, sums of subspaces, direct sums.

Chapter 2: Linear Transformations: Definition and properties of linear transformations, null spaces and ranges, invertible transformations.

Chapter 3: Polynomials: A seemingly tangential chapter, but crucial for understanding minimal polynomials later on.

Chapter 4: Eigenvalues, Eigenvectors, and Invariant Subspaces: The core of linear algebra; understanding eigenvalues and eigenvectors is crucial.

Chapter 5: Inner Product Spaces: Introduction to inner product spaces, orthogonality, Gram-Schmidt process.

Chapter 6: Operators on Inner Product Spaces: Self-adjoint operators, normal operators, spectral theorem.

Chapter 7: Trace and Determinant: Exploring properties of the trace and determinant.

Chapter 8: Appendices: Collection of useful definitions and theorems.

Conclusion: Summarizing the core concepts covered and highlighting the power and beauty of the linear algebra.

Detailed Explanation of Each Outline Point:

(Detailed explanations for each chapter would extend this response far beyond the practical limits. However, I can give you a concise overview of each chapter's content, expanding on any specific chapter upon request.)

Introduction: Sets, functions, and basic notation necessary to navigate the book's abstract framework.

Chapter 1 (Vector Spaces): Introduces the fundamental concept of vector spaces, their properties, subspaces, and linear combinations. Focuses on the abstract properties rather than solely on $\mathbb{R}^n$.

Chapter 2 (Linear Transformations): This chapter is central, focusing on the mapping between vector spaces which preserve linear structure. Null spaces, ranges, and invertibility are key concepts.

Chapter 3 (Polynomials): May seem out of place, but polynomials are essential tools for later chapters, specifically in the context of minimal polynomials of linear operators.

Chapter 4 (Eigenvalues, Eigenvectors, and Invariant Subspaces): This chapter dives deep into the essential concept of eigenvalues and eigenvectors, which are crucial for understanding the structure of linear transformations.

Chapter 5 (Inner Product Spaces): Introduces the concept of inner product spaces, which generalize the notion of dot product, leading to concepts like orthogonality and orthonormal bases.

Chapter 6 (Operators on Inner Product Spaces): Examines properties of linear operators on inner product spaces, focusing on self-adjoint, normal, and positive operators and their spectral decomposition.

Chapter 7 (Trace and Determinant): This chapter provides a sophisticated treatment of the determinant and trace, linking them to the underlying linear transformations.

Chapter 8 (Appendices): Provides supplementary material such as useful definitions, theorems, and proofs for reference.

FAQs:

1. Is Axler's book suitable for self-study? Yes, with discipline and potentially supplementary resources.
2. What prerequisite knowledge is needed? A solid foundation in basic mathematical reasoning and some familiarity with sets and functions.
3. Is it better than other linear algebra textbooks? It depends on learning style; its abstract approach is not for everyone, but its depth is unmatched for many.
4. How long does it take to complete the book? It varies drastically depending on mathematical background and time commitment; expect several months for thorough understanding.
5. Are there solutions manuals available? There are some unofficial solutions available online, but the focus should be on understanding, not just finding answers.
6. Is the book suitable for undergraduate or graduate level study? It is used in both undergraduate and graduate-level courses, depending on the curriculum.
7. What makes Axler's approach different? He prioritizes understanding linear transformations over matrix calculations, building a more robust theoretical foundation.

8. What are the best supplementary resources? Online lectures, practice problems from other textbooks, and collaborative learning groups.
9. Is it suitable for someone with a weak math background? It is challenging but possible, requiring extra effort and potentially supplemental materials.

Related Articles:

1. Linear Algebra: A Modern Introduction: A comparison of different approaches to teaching linear algebra.
2. The Importance of Linear Transformations in Linear Algebra: A deep dive into the central role of linear transformations.
3. Eigenvalues and Eigenvectors: A Practical Guide: A focused tutorial on understanding and calculating eigenvalues and eigenvectors.
4. Inner Product Spaces and their Applications: Exploring the applications of inner product spaces in various fields.
5. Linear Algebra for Machine Learning: How linear algebra underpins many machine learning algorithms.
6. Solving Linear Systems of Equations: A detailed look at various methods for solving linear systems.
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8. Understanding the Determinant: More Than Just a Number: A deeper look at the meaning and significance of the determinant.
9. Linear Algebra in Quantum Mechanics: How linear algebra is fundamental to the study of quantum mechanics.

This comprehensive guide provides a solid foundation for understanding and mastering Axler's "Linear Algebra Done Right." Remember, the key to success lies in active engagement with the material, consistent effort, and a willingness to embrace the abstract nature of the subject. Good luck!

axler linear algebra done right: Linear Algebra Done Right Sheldon Axler, 1997-07-18 This text for a second course in linear algebra, aimed at math majors and graduates, adopts a novel

approach by banishing determinants to the end of the book and focusing on understanding the structure of linear operators on vector spaces. The author has taken unusual care to motivate concepts and to simplify proofs. For example, the book presents - without having defined determinants - a clean proof that every linear operator on a finite-dimensional complex vector space has an eigenvalue. The book starts by discussing vector spaces, linear independence, span, basics, and dimension. Students are introduced to inner-product spaces in the first half of the book and shortly thereafter to the finite-dimensional spectral theorem. A variety of interesting exercises in each chapter helps students understand and manipulate the objects of linear algebra. This second edition features new chapters on diagonal matrices, on linear functionals and adjoints, and on the spectral theorem; some sections, such as those on self-adjoint and normal operators, have been entirely rewritten; and hundreds of minor improvements have been made throughout the text.

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axler linear algebra done right: Measure, Integration & Real Analysis Sheldon Axler, 2019-11-29 This open access textbook welcomes students into the fundamental theory of measure, integration, and real analysis. Focusing on an accessible approach, Axler lays the foundations for further study by promoting a deep understanding of key results. Content is carefully curated to suit a single course, or two-semester sequence of courses, creating a versatile entry point for graduate studies in all areas of pure and applied mathematics. Motivated by a brief review of Riemann integration and its deficiencies, the text begins by immersing students in the concepts of measure and integration. Lebesgue measure and abstract measures are developed together, with each providing key insight into the main ideas of the other approach. Lebesgue integration links into results such as the Lebesgue Differentiation Theorem. The development of products of abstract measures leads to Lebesgue measure on $\mathbb{R}^n$. Chapters on Banach spaces, L_p spaces, and Hilbert spaces showcase major results such as the Hahn-Banach Theorem, Hölder's Inequality, and the Riesz Representation Theorem. An in-depth study of linear maps on Hilbert spaces culminates in the Spectral Theorem and Singular Value Decomposition for compact operators, with an optional interlude in real and complex measures. Building on the Hilbert space material, a chapter on Fourier analysis provides an invaluable introduction to Fourier series and the Fourier transform. The final chapter offers a taste of probability. Extensively class tested at multiple universities and written by an award-winning mathematical expositor, Measure, Integration & Real Analysis is an ideal resource for students at the start of their journey into graduate mathematics. A prerequisite of elementary undergraduate real analysis is assumed; students and instructors looking to reinforce these ideas will appreciate the electronic Supplement for Measure, Integration & Real Analysis that is freely available online. For errata and updates, visit <https://measure.axler.net/>

axler linear algebra done right: Linear Algebra Problem Book Paul R. Halmos, 1995-12-31 Linear Algebra Problem Book can be either the main course or the dessert for someone who needs linear algebra and today that means every user of mathematics. It can be used as the basis of either an official course or a program of private study. If used as a course, the book can stand by itself, or if so desired, it can be stirred in with a standard linear algebra course as the seasoning that provides

the interest, the challenge, and the motivation that is needed by experienced scholars as much as by beginning students. The best way to learn is to do, and the purpose of this book is to get the reader to DO linear algebra. The approach is Socratic: first ask a question, then give a hint (if necessary), then, finally, for security and completeness, provide the detailed answer.

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Covers determinants, linear spaces, systems of linear equations, linear functions of a vector argument, coordinate transformations, the canonical form of the matrix of a linear operator, bilinear and quadratic forms, Euclidean spaces, unitary spaces, quadratic forms in Euclidean and unitary spaces, finite-dimensional space. Problems with hints and answers.

axler linear algebra done right: Precalculus Sheldon Axler, 2017-08-21 Sheldon Axler's Precalculus: A Prelude to Calculus, 3rd Edition focuses only on topics that students actually need to succeed in calculus. This book is geared towards courses with intermediate algebra prerequisites and it does not assume that students remember any trigonometry. It covers topics such as inverse functions, logarithms, half-life and exponential growth, area, e , the exponential function, the natural logarithm and trigonometry.

axler linear algebra done right: Linear Algebra Via Exterior Products Sergei Winitzki, 2009-07-30 This is a pedagogical introduction to the coordinate-free approach in basic finite-dimensional linear algebra. The reader should be already exposed to the array-based formalism of vector and matrix calculations. This book makes extensive use of the exterior (anti-commutative, wedge) product of vectors. The coordinate-free formalism and the exterior product, while somewhat more abstract, provide a deeper understanding of the classical results in linear algebra. Without cumbersome matrix calculations, this text derives the standard properties of determinants, the Pythagorean formula for multidimensional volumes, the formulas of Jacobi and Liouville, the Cayley-Hamilton theorem, the Jordan canonical form, the properties of Pfaffians, as well as some generalizations of these results.

axler linear algebra done right: Algebra and Trigonometry Sheldon Axler, 2011-03-08 Axler Algebra & Trigonometry is written for the two semester course. The text provides students with the skill and understanding needed for their coursework and for participating as an educated citizen in a complex society. Axler Algebra & Trigonometry focuses on depth, not breadth of topics by exploring necessary topics in greater detail. Readers will benefit from the straightforward definitions and plentiful examples of complex concepts. The Student Solutions Manual is integrated at the end of every section. The proximity of the solutions encourages students to go back and read the main text as they are working through the problems and exercises. The inclusion of the manual also saves students money. Axler Algebra & Trigonometry is available with WileyPLUS; an innovative, research-based, online environment for effective teaching and learning. WileyPLUS sold separately from text.

axler linear algebra done right: Calculus Gilbert Strang, Edwin Prine Herman, 2016-03-07 Published by OpenStax College, Calculus is designed for the typical two- or three-semester general calculus course, incorporating innovative features to enhance student learning. The book guides students through the core concepts of calculus and helps them understand how those concepts apply to their lives and the world around them. Due to the comprehensive nature of the material, we are offering the book in three volumes for flexibility and efficiency. Volume 2 covers integration, differential equations, sequences and series, and parametric equations and polar coordinates.--BC Campus website.

axler linear algebra done right: Advanced Linear Algebra Steven Roman, 2007-12-31 Covers a notably broad range of topics, including some topics not generally found in linear algebra books Contains a discussion of the basics of linear algebra

axler linear algebra done right: Linear Algebra in Action Harry Dym, 2023-07-18 This book is based largely on courses that the author taught at the Feinberg Graduate School of the Weizmann Institute. It conveys in a user-friendly way the basic and advanced techniques of linear algebra from the point of view of a working analyst. The techniques are illustrated by a wide sample of

applications and examples that are chosen to highlight the tools of the trade. In short, this is material that the author has found to be useful in his own research and wishes that he had been exposed to as a graduate student. Roughly the first quarter of the book reviews the contents of a basic course in linear algebra, plus a little. The remaining chapters treat singular value decompositions, convexity, special classes of matrices, projections, assorted algorithms, and a number of applications. The applications are drawn from vector calculus, numerical analysis, control theory, complex analysis, convex optimization, and functional analysis. In particular, fixed point theorems, extremal problems, best approximations, matrix equations, zero location and eigenvalue location problems, matrices with nonnegative entries, and reproducing kernels are discussed. This new edition differs significantly from the second edition in both content and style. It includes a number of topics that did not appear in the earlier edition and excludes some that did. Moreover, most of the material that has been adapted from the earlier edition has been extensively rewritten and reorganized.

axler linear algebra done right: Linear Algebra Jim Hefferon, 2015 This text covers a standard first course : Gauss's method, vector spaces, linear maps and matrices, determinants, and eigenvalues and eigenvectors. In addition, each chapter ends with some topics such as brief applications. What sets it apart is careful motivation, many examples, and extensive exercise sets. Together these help each student master the material of this course, and also help an instructor develop that student's level of mathematical maturity. This book has been available online for many years and is widely used, both in classrooms and for self-study. It is supported by worked answers for all exercises, beamer slides for classroom use, and a lab manual of computer work--Page 4 of cover.

axler linear algebra done right: Introduction to Applied Linear Algebra Stephen Boyd, Lieven Vandenberghe, 2018-06-07 A groundbreaking introduction to vectors, matrices, and least squares for engineering applications, offering a wealth of practical examples.

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axler linear algebra done right: Introduction to Linear Algebra Serge Lang, 2012-12-06 This is a short text in linear algebra, intended for a one-term course. In the first chapter, Lang discusses the relation between the geometry and the algebra underlying the subject, and gives concrete examples of the notions which appear later in the book. He then starts with a discussion of linear equations, matrices and Gaussian elimination, and proceeds to discuss vector spaces, linear maps, scalar products, determinants, and eigenvalues. The book contains a large number of exercises, some of the routine computational type, while others are conceptual.

axler linear algebra done right: Linear Algebra Kenneth Hoffman, Ray Alden Kunze, 2015

axler linear algebra done right: Linear Algebra Kuldeep Singh, 2013-10 This book is intended for first- and second-year undergraduates arriving with average mathematics grades ... The strength of the text is in the large number of examples and the step-by-step explanation of each topic as it is introduced. It is compiled in a way that allows distance learning, with explicit solutions to all of the set problems freely available online <http://www.oup.co.uk/companion/singh> -- From preface.

axler linear algebra done right: Problems and Theorems in Linear Algebra Viktor Vasil_evich Prasolov, 1994-06-13 There are a number of very good books available on linear algebra. However, new results in linear algebra appear constantly, as do new, simpler, and better proofs of old results. Many of these results and proofs obtained in the past thirty years are accessible to undergraduate mathematics majors, but are usually ignored by textbooks. In addition, more than a few interesting old results are not covered in many books. In this book, the author provides the basics of linear algebra, with an emphasis on new results and on nonstandard and interesting proofs. The book

features about 230 problems with complete solutions. It can serve as a supplementary text for an undergraduate or graduate algebra course.

axler linear algebra done right: A (Terse) Introduction to Linear Algebra Yitzhak Katznelson, Yonatan R. Katznelson, 2008 Linear algebra is the study of vector spaces and the linear maps between them. It underlies much of modern mathematics and is widely used in applications.

axler linear algebra done right: A Transition to Advanced Mathematics Douglas Smith, Maurice Eggen, Richard St. Andre, 2010-06-01 A TRANSITION TO ADVANCED MATHEMATICS helps students make the transition from calculus to more proofs-oriented mathematical study. The most successful text of its kind, the 7th edition continues to provide a firm foundation in major concepts needed for continued study and guides students to think and express themselves mathematically to analyze a situation, extract pertinent facts, and draw appropriate conclusions. The authors place continuous emphasis throughout on improving students' ability to read and write proofs, and on developing their critical awareness for spotting common errors in proofs. Concepts are clearly explained and supported with detailed examples, while abundant and diverse exercises provide thorough practice on both routine and more challenging problems. Students will come away with a solid intuition for the types of mathematical reasoning they'll need to apply in later courses and a better understanding of how mathematicians of all kinds approach and solve problems. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

axler linear algebra done right: A Second Course in Linear Algebra Stephan Ramon Garcia, Roger A. Horn, 2017-05-11 A second course in linear algebra for undergraduates in mathematics, computer science, physics, statistics, and the biological sciences.

axler linear algebra done right: Abstract Algebra Dan Saracino, 2008-09-02 The Second Edition of this classic text maintains the clear exposition, logical organization, and accessible breadth of coverage that have been its hallmarks. It plunges directly into algebraic structures and incorporates an unusually large number of examples to clarify abstract concepts as they arise. Proofs of theorems do more than just prove the stated results; Saracino examines them so readers gain a better impression of where the proofs come from and why they proceed as they do. Most of the exercises range from easy to moderately difficult and ask for understanding of ideas rather than flashes of insight. The new edition introduces five new sections on field extensions and Galois theory, increasing its versatility by making it appropriate for a two-semester as well as a one-semester course.

axler linear algebra done right: The Linear Algebra a Beginning Graduate Student Ought to Know Jonathan S. Golan, 2007-04-05 This book rigorously deals with the abstract theory and, at the same time, devotes considerable space to the numerical and computational aspects of linear algebra. It features a large number of thumbnail portraits of researchers who have contributed to the development of linear algebra as we know it today and also includes over 1,000 exercises, many of which are very challenging. The book can be used as a self-study guide; a textbook for a course in advanced linear algebra, either at the upper-class undergraduate level or at the first-year graduate level; or as a reference book.

axler linear algebra done right: Introduction to Linear and Matrix Algebra Nathaniel Johnston, 2021-05-19 This textbook emphasizes the interplay between algebra and geometry to motivate the study of linear algebra. Matrices and linear transformations are presented as two sides of the same coin, with their connection motivating inquiry throughout the book. By focusing on this interface, the author offers a conceptual appreciation of the mathematics that is at the heart of further theory and applications. Those continuing to a second course in linear algebra will appreciate the companion volume Advanced Linear and Matrix Algebra. Starting with an introduction to vectors, matrices, and linear transformations, the book focuses on building a geometric intuition of what these tools represent. Linear systems offer a powerful application of the ideas seen so far, and lead onto the introduction of subspaces, linear independence, bases, and rank. Investigation then focuses on the algebraic properties of matrices that illuminate the geometry of

the linear transformations that they represent. Determinants, eigenvalues, and eigenvectors all benefit from this geometric viewpoint. Throughout, "Extra Topic" sections augment the core content with a wide range of ideas and applications, from linear programming, to power iteration and linear recurrence relations. Exercises of all levels accompany each section, including many designed to be tackled using computer software. Introduction to Linear and Matrix Algebra is ideal for an introductory proof-based linear algebra course. The engaging color presentation and frequent marginal notes showcase the author's visual approach. Students are assumed to have completed one or two university-level mathematics courses, though calculus is not an explicit requirement. Instructors will appreciate the ample opportunities to choose topics that align with the needs of each classroom, and the online homework sets that are available through WeBWork.

axler linear algebra done right: Matrices and Linear Transformations Charles G. Cullen, 2012-09-20 Undergraduate-level introduction to linear algebra and matrix theory. Explores matrices and linear systems, vector spaces, determinants, spectral decomposition, Jordan canonical form, much more. Over 375 problems. Selected answers. 1972 edition.

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axler linear algebra done right: A First Course in Calculus Serge Lang, 2012-09-17 This fifth edition of Lang's book covers all the topics traditionally taught in the first-year calculus sequence. Divided into five parts, each section of A FIRST COURSE IN CALCULUS contains examples and applications relating to the topic covered. In addition, the rear of the book contains detailed solutions to a large number of the exercises, allowing them to be used as worked-out examples -- one of the main improvements over previous editions.

axler linear algebra done right: Groups, Matrices, and Vector Spaces James B. Carrell, 2017-09-02 This unique text provides a geometric approach to group theory and linear algebra, bringing to light the interesting ways in which these subjects interact. Requiring few prerequisites beyond understanding the notion of a proof, the text aims to give students a strong foundation in both geometry and algebra. Starting with preliminaries (relations, elementary combinatorics, and induction), the book then proceeds to the core topics: the elements of the theory of groups and fields (Lagrange's Theorem, cosets, the complex numbers and the prime fields), matrix theory and matrix groups, determinants, vector spaces, linear mappings, eigentheory and diagonalization, Jordan decomposition and normal form, normal matrices, and quadratic forms. The final two chapters consist of a more intensive look at group theory, emphasizing orbit stabilizer methods, and an introduction to linear algebraic groups, which enriches the notion of a matrix group. Applications involving symmetry groups, determinants, linear coding theory and cryptography are interwoven throughout. Each section ends with ample practice problems assisting the reader to better understand the material. Some of the applications are illustrated in the chapter appendices. The author's unique melding of topics evolved from a two semester course that he taught at the University of British Columbia consisting of an undergraduate honors course on abstract linear algebra and a similar course on the theory of groups. The combined content from both makes this

rare text ideal for a year-long course, covering more material than most linear algebra texts. It is also optimal for independent study and as a supplementary text for various professional applications. Advanced undergraduate or graduate students in mathematics, physics, computer science and engineering will find this book both useful and enjoyable.

axler linear algebra done right: *Matrices and Linear Algebra* Hans Schneider, George Phillip Barker, 2012-06-08 Linear algebra is one of the central disciplines in mathematics. A student of pure mathematics must know linear algebra if he is to continue with modern algebra or functional analysis. Much of the mathematics now taught to engineers and physicists requires it. This well-known and highly regarded text makes the subject accessible to undergraduates with little mathematical experience. Written mainly for students in physics, engineering, economics, and other fields outside mathematics, the book gives the theory of matrices and applications to systems of linear equations, as well as many related topics such as determinants, eigenvalues, and differential equations. Table of Contents: 1. The Algebra of Matrices 2. Linear Equations 3. Vector Spaces 4. Determinants 5. Linear Transformations 6. Eigenvalues and Eigenvectors 7. Inner Product Spaces 8. Applications to Differential Equations For the second edition, the authors added several exercises in each chapter and a brand new section in Chapter 7. The exercises, which are both true-false and multiple-choice, will enable the student to test his grasp of the definitions and theorems in the chapter. The new section in Chapter 7 illustrates the geometric content of Sylvester's Theorem by means of conic sections and quadric surfaces. 6 line drawings. Index. Two prefaces. Answer section.

axler linear algebra done right: *A Glimpse at Hilbert Space Operators* Sheldon Axler, Peter Rosenthal, Donald Sarason, 2011-04-13 Paul Richard Halmos, who lived a life of unbounded devotion to mathematics and to the mathematical community, died at the age of 90 on October 2, 2006. This volume is a memorial to Paul by operator theorists he inspired. Paul's initial research, beginning with his 1938 Ph.D. thesis at the University of Illinois under Joseph Doob, was in probability, ergodic theory, and measure theory. A shift occurred in the 1950s when Paul's interest in foundations led him to invent a subject he termed algebraic logic, resulting in a succession of papers on that subject appearing between 1954 and 1961, and the book *Algebraic Logic*, published in 1962. Paul's first two papers in pure operator theory appeared in 1950. After 1960 Paul's research focused on Hilbert space operators, a subject he viewed as encompassing infinite-dimensional linear algebra. Beyond his research, Paul contributed to mathematics and to its community in manifold ways: as a renowned expositor, as an innovative teacher, as a tireless editor, and through unstinting service to the American Mathematical Society and to the Mathematical Association of America. Much of Paul's influence flowed at a personal level. Paul had a genuine, uncalculating interest in people; he developed an enormous number of friendships over the years, both with mathematicians and with nonmathematicians. Many of his mathematical friends, including the editors of this volume, while absorbing abundant quantities of mathematics at Paul's knee, learned from his advice and his example what it means to be a mathematician.

axler linear algebra done right: **College Algebra, Binder Ready Version** Sheldon Axler, 2017-05-22 *College Algebra*, First Edition will appeal to those who want to give important topics more in-depth, higher-level coverage. This text offers streamlined approach accompanied with accessible definitions across all chapters to allow for an easy-to-understand read. *College Algebra* contains prose that is precise, accurate, and easy to read, with straightforward definitions of even the topics that are typically most difficult for students.

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online videos of Gilbert Strang's 18.06 linear algebra course at MIT, via OpenCourseWare (ocw.mit.edu), that have been watched by over a million viewers. Also on the web (<http://web.mit.edu/18.06/www/>), readers will find years of MIT exam questions, MATLAB help files and problem sets to practise what they have learned.

axler linear algebra done right: No Bullshit Guide to Linear Algebra Ivan Savov, 2020-10-25 This textbook covers the material for an undergraduate linear algebra course: vectors, matrices, linear transformations, computational techniques, geometric constructions, and theoretical foundations. The explanations are given in an informal conversational tone. The book also contains 100+ problems and exercises with answers and solutions. A special feature of this textbook is the prerequisites chapter that covers topics from high school math, which are necessary for learning linear algebra. The presence of this chapter makes the book suitable for beginners and the general audience—readers need not be math experts to read this book. Another unique aspect of the book are the applications chapters (Ch 7, 8, and 9) that discuss applications of linear algebra to engineering, computer science, economics, chemistry, machine learning, and even quantum mechanics.

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