

linear algebra done right sheldon axler

Linear Algebra Done Right: Sheldon Axler's Masterpiece and Your Path to Mastery

Introduction:

Are you wrestling with the complexities of linear algebra? Do you find yourself drowning in a sea of theorems and proofs, feeling lost and overwhelmed? Then you've come to the right place. This comprehensive guide dives deep into Sheldon Axler's renowned textbook, "Linear Algebra Done Right," exploring its strengths, weaknesses, its unique approach, and how to effectively utilize it to conquer this fundamental mathematical subject. We'll dissect the book's structure, content, and overall effectiveness, offering practical strategies for maximizing your learning experience. Whether you're a seasoned mathematician or a beginner taking your first steps into the world of linear algebra, this post will illuminate the path to success with Axler's groundbreaking text.

Understanding Axler's Unique Approach: Why "Done Right"?

Sheldon Axler's "Linear Algebra Done Right" distinguishes itself from traditional linear algebra textbooks by prioritizing a rigorous yet intuitive approach. Unlike many introductory texts that rely heavily on matrices and computations early on, Axler emphasizes a more abstract, conceptually driven understanding built upon the foundations of vector spaces, linear transformations, and their properties. This approach, while initially challenging for some, offers a deeper and more lasting comprehension of the subject's underlying principles.

Key Advantages of Axler's Method:

Conceptual Clarity: Axler prioritizes conceptual understanding over rote memorization of algorithms. This strengthens your ability to apply linear algebra concepts in diverse settings.

Elegant Proofs: The book boasts elegant and insightful proofs that foster a deeper understanding of the "why" behind the mathematical statements.

Focus on Linear Transformations: Linear transformations are placed at the heart of the text, providing a more powerful and unified framework for understanding linear algebra.

Strong Foundation for Advanced Studies: Mastering Axler's approach provides a solid foundation for more advanced linear algebra and related mathematical

fields.

Navigating the Book: A Structured Approach to Learning

Many students find Axler's book challenging. The key to success lies in a structured and systematic approach. Here's a suggested strategy:

Engage Actively: Don't just passively read; actively engage with the material. Work through each proof, pausing to consider the reasoning at every step.

Solve Problems: The exercises are crucial. Don't shy away from them; they are the bedrock of your understanding. Start with the easier problems and gradually move towards the more challenging ones.

Seek Clarification: Don't hesitate to consult online resources, seek help from instructors or peers, or attend study groups. Collaboration can significantly enhance your learning.

Embrace the Abstract: Axler's approach demands abstract thinking. Practice visualizing concepts, formulating your own explanations, and connecting different ideas.

The Structure of "Linear Algebra Done Right": A Detailed Breakdown

The book is typically organized into several major sections, each building upon the previous one. While editions may vary slightly, the core structure remains consistent. A typical outline looks like this:

Content Outline of "Linear Algebra Done Right"

Introduction: Sets the stage, introducing basic concepts and notations.

Vector Spaces: Defines vector spaces, subspaces, bases, and dimension. This forms the fundamental bedrock of the entire text. Expect rigorous definitions and proofs here.

Linear Transformations: Introduces linear transformations, null spaces, ranges, and their properties. This is a central focus of the book.

Matrices: Matrices are introduced later, as representations of linear transformations. This order emphasizes conceptual understanding before computational aspects.

Inner Product Spaces: Explores inner product spaces, orthogonality, and related concepts.

Determinants: Covers determinants and their properties, building upon the previously established concepts.

Eigenvalues and Eigenvectors: A crucial topic, this section delves into the characteristics and applications of eigenvalues and eigenvectors.

Canonical Forms: Discusses different canonical forms (Jordan form, etc.), providing a deeper understanding of linear transformations' structure.

Appendix: Usually contains supplementary information or background material.

Detailed Explanation of Each Section:

1. Introduction: This section lays the groundwork, defining sets, functions, and other essential mathematical tools needed for the rest of the book. Axler typically maintains a concise style, focusing on the necessary concepts without getting bogged down in excessive detail.
1. Vector Spaces: This is arguably the most crucial section. Axler meticulously defines vector spaces and their properties, introducing concepts like subspaces, linear independence, bases, and dimension. The proofs are rigorous and illuminating, building a deep understanding of the underlying structure.
1. Linear Transformations: Here, the focus shifts from vector spaces themselves to the mappings between them. Axler introduces linear transformations, exploring their properties, null spaces, ranges, and the crucial concept of isomorphism.
1. Matrices: Matrices finally make their appearance, but not as the primary focus. Axler introduces them as representations of linear transformations, emphasizing their role as a tool for computation rather than as a fundamental concept in themselves.
1. Inner Product Spaces: This section introduces the concept of inner product spaces, which extend the notion of vector spaces by adding structure through an inner product (like the dot product in $\mathbb{R}^n$). Orthogonality, orthonormal bases, and related topics are covered here.
1. Determinants: Axler presents a rigorous and insightful treatment of determinants, building upon the previously established concepts of linear transformations and vector spaces. This section demonstrates the power of the abstract approach.

1. Eigenvalues and Eigenvectors: This is a pivotal chapter, covering eigenvalues and eigenvectors, which are essential for understanding many aspects of linear algebra and its applications. The concepts are explored thoroughly, with rigorous proofs and insightful explanations.
1. Canonical Forms: This advanced section delves into different canonical forms (such as the Jordan canonical form), offering a more refined understanding of the structure of linear transformations.
1. Appendix: Often includes helpful background material, mathematical notations, or additional exercises.

Frequently Asked Questions (FAQs)

1. Is "Linear Algebra Done Right" suitable for beginners? While it's rigorous, it's accessible to beginners with a strong mathematical foundation. However, it requires significant effort and dedication.
1. How does this book compare to other linear algebra textbooks? It differs significantly by prioritizing abstract concepts over computational techniques. It's more theoretically focused than many introductory texts.
1. What are the prerequisites for reading this book? A solid grasp of high school algebra and some exposure to proof-writing techniques are beneficial.
1. What makes Axler's approach "right"? Axler's approach emphasizes a deeper, more intuitive understanding of linear algebra's fundamental concepts, leading to stronger problem-solving skills.

1. Are there online resources to supplement the book? Yes, numerous online resources, including lecture notes, videos, and practice problems, can be found to help in understanding the concepts.
1. Is the book self-contained? It's largely self-contained, but prior exposure to some basic mathematical concepts is helpful.
1. How much time should I dedicate to this book? The required time depends on individual learning styles and background. Plan for a significant time commitment.
1. What are the main applications of linear algebra learned in this book? Linear algebra finds applications in diverse fields, including computer science, physics, engineering, and machine learning.
1. Are there solutions manuals available? While a formal solutions manual might not be readily available, solutions to selected problems can often be found online.

Related Articles:

1. Linear Algebra for Dummies: A simplified introduction to basic linear algebra concepts.
2. Introduction to Linear Algebra with Applications: Focuses on practical applications of linear algebra in different fields.
3. Linear Algebra and Its Applications by David C. Lay: A comparison of Axler's approach with a more traditional textbook.
4. The Essence of Linear Algebra (3Blue1Brown): A visual and intuitive explanation of linear algebra concepts through video lectures.
5. Understanding Vector Spaces: A Beginner's Guide: A detailed explanation of vector spaces and their properties.
6. Linear Transformations: A Conceptual Approach: Explores linear

transformations from a conceptual standpoint.

7. Eigenvalues and Eigenvectors: An Intuitive Explanation: Simplifies the understanding of eigenvalues and eigenvectors.
8. Solving Linear Systems of Equations: Focuses on practical techniques for solving linear equations.
9. Applications of Linear Algebra in Machine Learning: Explores the use of linear algebra in machine learning algorithms.

linear algebra done right sheldon axler: *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.

linear algebra done right sheldon axler: *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/>

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1977-06-01 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.

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linear algebra done right sheldon axler: *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.

linear algebra done right sheldon axler: 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.

linear algebra done right sheldon axler: 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.

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detailed answer.

linear algebra done right sheldon axler: *Harmonic Function Theory* Sheldon Axler, Paul Bourdon, Ramey Wade, 2013-11-11 This book is about harmonic functions in Euclidean space. This new edition contains a completely rewritten chapter on spherical harmonics, a new section on extensions of Bochner's Theorem, new exercises and proofs, as well as revisions throughout to improve the text. A unique software package supplements the text for readers who wish to explore harmonic function theory on a computer.

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

linear algebra done right sheldon axler: *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.

linear algebra done right sheldon axler: *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.

linear algebra done right sheldon axler: *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.

linear algebra done right sheldon axler: *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.

linear algebra done right sheldon axler: *Applied Linear Algebra* Peter J. Olver, Chehrzad Shakiban, 2018-05-30 This textbook develops the essential tools of linear algebra, with the goal of imparting technique alongside contextual understanding. Applications go hand-in-hand with theory,

each reinforcing and explaining the other. This approach encourages students to develop not only the technical proficiency needed to go on to further study, but an appreciation for when, why, and how the tools of linear algebra can be used across modern applied mathematics. Providing an extensive treatment of essential topics such as Gaussian elimination, inner products and norms, and eigenvalues and singular values, this text can be used for an in-depth first course, or an application-driven second course in linear algebra. In this second edition, applications have been updated and expanded to include numerical methods, dynamical systems, data analysis, and signal processing, while the pedagogical flow of the core material has been improved. Throughout, the text emphasizes the conceptual connections between each application and the underlying linear algebraic techniques, thereby enabling students not only to learn how to apply the mathematical tools in routine contexts, but also to understand what is required to adapt to unusual or emerging problems. No previous knowledge of linear algebra is needed to approach this text, with single-variable calculus as the only formal prerequisite. However, the reader will need to draw upon some mathematical maturity to engage in the increasing abstraction inherent to the subject. Once equipped with the main tools and concepts from this book, students will be prepared for further study in differential equations, numerical analysis, data science and statistics, and a broad range of applications. The first author's text, *Introduction to Partial Differential Equations*, is an ideal companion volume, forming a natural extension of the linear mathematical methods developed here.

linear algebra done right sheldon axler: *Linear Algebra As An Introduction To Abstract Mathematics* Bruno Nachtergaele, Anne Schilling, Isaiah Lankham, 2015-11-30 This is an introductory textbook designed for undergraduate mathematics majors with an emphasis on abstraction and in particular, the concept of proofs in the setting of linear algebra. Typically such a student would have taken calculus, though the only prerequisite is suitable mathematical grounding. The purpose of this book is to bridge the gap between the more conceptual and computational oriented undergraduate classes to the more abstract oriented classes. The book begins with systems of linear equations and complex numbers, then relates these to the abstract notion of linear maps on finite-dimensional vector spaces, and covers diagonalization, eigenspaces, determinants, and the Spectral Theorem. Each chapter concludes with both proof-writing and computational exercises.

linear algebra done right sheldon axler: **Practical Linear Algebra** Gerald Farin, Dianne Hansford, 2021-10-12 Linear algebra is growing in importance. 3D entertainment, animations in movies and video games are developed using linear algebra. Animated characters are generated using equations straight out of this book. Linear algebra is used to extract knowledge from the massive amounts of data generated from modern technology. The Fourth Edition of this popular text introduces linear algebra in a comprehensive, geometric, and algorithmic way. The authors start with the fundamentals in 2D and 3D, then move on to higher dimensions, expanding on the fundamentals and introducing new topics, which are necessary for many real-life applications and the development of abstract thought. Applications are introduced to motivate topics. The subtitle, *A Geometry Toolbox*, hints at the book's geometric approach, which is supported by many sketches and figures. Furthermore, the book covers applications of triangles, polygons, conics, and curves. Examples demonstrate each topic in action. This practical approach to a linear algebra course, whether through classroom instruction or self-study, is unique to this book. New to the Fourth Edition: Ten new application sections. A new section on change of basis. This concept now appears in several places. Chapters 14-16 on higher dimensions are notably revised. A deeper look at polynomials in the gallery of spaces. Introduces the QR decomposition and its relevance to least squares. Similarity and diagonalization are given more attention, as are eigenfunctions. A longer thread on least squares, running from orthogonal projections to a solution via SVD and the pseudoinverse. More applications for PCA have been added. More examples, exercises, and more on the kernel and general linear spaces. A list of applications has been added in Appendix A. The book gives instructors the option of tailoring the course for the primary interests of their students: mathematics, engineering, science, computer graphics, and geometric modeling.

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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.

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linear algebra done right sheldon axler: A First Course in Linear Algebra Kenneth Kuttler, Ilijas Farah, 2020 A First Course in Linear Algebra, originally by K. Kuttler, has been redesigned by the Lyryx editorial team as a first course for the general students who have an understanding of basic high school algebra and intend to be users of linear algebra methods in their profession, from business & economics to science students. All major topics of linear algebra are available in detail, as well as justifications of important results. In addition, connections to topics covered in advanced courses are introduced. The textbook is designed in a modular fashion to maximize flexibility and facilitate adaptation to a given course outline and student profile. Each chapter begins with a list of student learning outcomes, and examples and diagrams are given throughout the text to reinforce ideas and provide guidance on how to approach various problems. Suggested exercises are included at the end of each section, with selected answers at the end of the textbook.--BCcampus website.

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codingthematrix.com provides data and support code. Most of the assignments can be auto-graded online. Over two hundred illustrations, including a selection of relevant xkcd comics. Chapters: The Function, The Field, The Vector, The Vector Space, The Matrix, The Basis, Dimension, Gaussian Elimination, The Inner Product, Special Bases, The Singular Value Decomposition, The Eigenvector, The Linear Program A new edition of this text, incorporating corrections and an expanded index, has been issued as of September 4, 2013, and will soon be available on Amazon.

linear algebra done right sheldon axler: Linear Algebra Arak M. Mathai, Hans J. Haubold, 2017-10-23 In order not to intimidate students by a too abstract approach, this textbook on linear algebra is written to be easy to digest by non-mathematicians. It introduces the concepts of vector spaces and mappings between them without dwelling on statements such as theorems and proofs too much. It is also designed to be self-contained, so no other material is required for an understanding of the topics covered. As the basis for courses on space and atmospheric science, remote sensing, geographic information systems, meteorology, climate and satellite communications at UN-affiliated regional centers, various applications of the formal theory are discussed as well. These include differential equations, statistics, optimization and some engineering-motivated problems in physics. Contents Vectors Matrices Determinants Eigenvalues and eigenvectors Some applications of matrices and determinants Matrix series and additional properties of matrices

linear algebra done right sheldon axler: 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 finite-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.

linear algebra done right sheldon axler: 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.

linear algebra done right sheldon axler: 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.

linear algebra done right sheldon axler: 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.

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