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Linear Algebra Projective Geometry Pdf Pdf (2023)

Linear Algebra and Projective Geometry Reinhold Baer 2012-06-11 Geared toward upper-level undergraduates and graduate students, this text establishes that projective geometry and linear algebra are essentially identical. The supporting evidence consists of theorems offering an algebraic demonstration of certain geometric concepts. 1952 edition.

An Undergraduate Primer in Algebraic Geometry Ciro Ciliberto 2021-05-05 This book consists of two parts. The first is devoted to an introduction to basic concepts in algebraic geometry: affine and projective varieties, some of their main attributes and examples. The second part is devoted to the theory of curves: local properties, affine

and projective plane curves, resolution of singularities, linear equivalence of divisors and linear series, Riemann–Roch and Riemann–Hurwitz Theorems. The approach in this book is purely algebraic. The main tool is commutative algebra, from which the needed results are recalled, in most cases with proofs. The prerequisites consist of the knowledge of basics in affine and projective geometry, basic algebraic concepts regarding rings, modules, fields, linear algebra, basic notions in the theory of categories, and some elementary point–set topology. This book can be used as a textbook for an undergraduate course in algebraic geometry. The users of the book are not necessarily intended to become algebraic geometers but may be interested students or researchers who want to have a first smattering in the topic. The book contains several exercises, in which there are more examples and parts of the theory that are not fully developed in the text. Of some exercises, there are solutions at the end of each chapter.

Modern Projective Geometry Claude-Alain Faure 2013-04-18 This monograph develops projective geometries and provides a systematic treatment of morphisms. It introduces a new fundamental theorem and its applications describing morphisms of projective geometries in homogeneous coordinates by semilinear maps. Other topics treated include three equivalent definitions of projective geometries and their correspondence with certain lattices; quotients of projective geometries and isomorphism theorems; and recent results in dimension theory.

Lectures on Curves, Surfaces and Projective Varieties Mauro Beltrametti 2009 This book offers a wide-ranging introduction to algebraic geometry along classical lines. It consists of lectures on topics in classical algebraic geometry, including the basic properties of projective algebraic varieties, linear systems of hypersurfaces, algebraic curves (with special emphasis on rational curves), linear series on algebraic curves, Cremona transformations, rational surfaces, and notable examples of special varieties like the Segre, Grassmann, and Veronese varieties. An integral part and special feature of the presentation is the inclusion of many exercises, not easy to find in the literature and almost all with complete solutions. The text is aimed at students in the last two years of an undergraduate program in mathematics. It contains some rather advanced topics suitable for specialized courses at the advanced undergraduate or beginning graduate level, as well as interesting topics for a senior thesis. The prerequisites have been deliberately limited to basic elements of projective geometry and abstract algebra. Thus, for example, some knowledge of the geometry of subspaces and properties of fields is assumed. The book will be welcomed by teachers and students of algebraic geometry who are seeking a clear and panoramic path leading from the basic facts about linear subspaces, conics and quadrics to a systematic discussion of classical algebraic varieties and the tools needed to study them. The text provides a solid foundation for approaching more advanced and abstract literature.

Algebraic Geometry Robin Hartshorne 2013-06-29 An introduction to abstract algebraic geometry, with the only prerequisites being results from commutative algebra, which are stated as needed, and some elementary topology. More than 400 exercises distributed throughout the book offer specific examples as well as more specialised topics not treated in the main text, while three appendices present brief accounts of some areas of current research. This book can thus be used as textbook for an introductory course in algebraic geometry following a basic graduate course in algebra. Robin Hartshorne studied algebraic geometry with Oscar Zariski and David Mumford at Harvard, and with J.-P. Serre and A. Grothendieck in Paris. He is the author of "Residues and Duality", "Foundations of Projective Geometry", "Ample Subvarieties of Algebraic Varieties", and numerous research titles.

Ideals, Varieties, and Algorithms David Cox 2013-04-17 Written at a level appropriate to undergraduates, this book covers such topics as the Hilbert Basis Theorem, the Nullstellensatz, invariant theory, projective geometry, and dimension theory. Contains a new section on Axiom and an update about MAPLE, Mathematica and REDUCE.

Foundations of Algebraic Geometry André Weil 1946 This classic is one of the cornerstones of modern algebraic geometry. At the same time, it is entirely self-contained, assuming no knowledge whatsoever of algebraic geometry, and no knowledge of modern algebra beyond the simplest

facts about abstract fields and their extensions, and the bare rudiments of the theory of ideals.

Oriented Projective Geometry Jorge Stolfi 2014-05-10 Oriented Projective Geometry: A Framework for Geometric Computations proposes that oriented projective geometry is a better framework for geometric computations than classical projective geometry. The aim of the book is to stress the value of oriented projective geometry for practical computing and develop it as a rich, consistent, and effective tool for computer programmers. The monograph is comprised of 20 chapters. Chapter 1 gives a quick overview of classical and oriented projective geometry on the plane, and discusses their advantages and disadvantages as computational models. Chapters 2 through 7 define the canonical oriented projective spaces of arbitrary dimension, the operations of join and meet, and the concept of relative orientation. Chapter 8 defines projective maps, the space transformations that preserve incidence and orientation; these maps are used in chapter 9 to define abstract oriented projective spaces. Chapter 10 introduces the notion of projective duality. Chapters 11, 12, and 13 deal with projective functions, projective frames, relative coordinates, and cross-ratio. Chapter 14 tells about convexity in oriented projective spaces. Chapters 15, 16, and 17 show how the affine, Euclidean, and linear vector spaces can be emulated with the oriented projective space. Finally, chapters 18 through 20 discuss the computer representation and manipulation of lines, planes, and other subspaces. Computer scientists and programmers will find this text invaluable.

Uncertain Projective Geometry Stephan Heuel 2004-04-22 Algebraic projective geometry, with its multilinear relations and its embedding into Grassmann-Cayley algebra, has become the basic representation of multiple view geometry, resulting in deep insights into the algebraic structure of geometric relations, as well as in efficient and versatile algorithms for computer vision and image analysis. This book provides a coherent integration of algebraic projective geometry and spatial reasoning under uncertainty with applications in computer vision. Beyond systematically introducing the theoretical foundations from geometry and statistics and clear rules for performing geometric reasoning under uncertainty, the author provides a collection of detailed algorithms. The book addresses researchers and advanced students interested in algebraic projective geometry for image analysis, in statistical representation of objects and transformations, or in generic tools for testing and estimating within the context of geometric multiple-view analysis.

Projective Geometry and Modern Algebra Lars Kadison 1996-01-26 The techniques and concepts of modern algebra are introduced for their natural role in the study of projectile geometry; groups appear as automorphism groups of configurations, division rings appear in the study of Desargues' theorem and the study of the independence of the seven axioms given for projectile geometry.

Positivity in Algebraic Geometry I R.K. Lazarsfeld 2004-08-24 This two volume work on Positivity in Algebraic Geometry contains a contemporary account of a body of work in complex algebraic geometry loosely centered around the theme of positivity. Topics in Volume I include ample line bundles and linear series on a projective variety, the classical theorems of Lefschetz and Bertini and their modern outgrowths, vanishing theorems, and local positivity. Volume II begins with a survey of positivity for vector bundles, and moves on to a systematic development of the theory of multiplier ideals and their applications. A good deal of this material has not previously appeared in book form, and substantial parts are worked out here in detail for the first time. At least a third of the book is devoted to concrete examples, applications, and pointers to further developments. Volume I is more elementary than Volume II, and, for the most part, it can be read without access to Volume II.

Linear Algebra and Geometry David Smart 1988

Introduction to Classical Geometries Ana Irene Ramírez Galarza 2007-05-02 This book develops the geometric intuition of the reader by examining the symmetries (or rigid motions) of the space in question. This approach introduces in turn all the classical geometries: Euclidean, affine, elliptic, projective and hyperbolic. The main focus is on the

mathematically rich two-dimensional case, although some aspects of 3- or n-dimensional geometries are included. Basic notions of algebra and analysis are used to convey better understanding of various concepts and results. Concepts of geometry are presented in a very simple way, so that they become easily accessible: the only pre-requisites are calculus, linear algebra and basic analytic geometry.

Linear Algebra and Geometry Igor R. Shafarevich 2012-08-23 This book on linear algebra and geometry is based on a course given by renowned academician I.R. Shafarevich at Moscow State University. The book begins with the theory of linear algebraic equations and the basic elements of matrix theory and continues with vector spaces, linear transformations, inner product spaces, and the theory of affine and projective spaces. The book also includes some subjects that are naturally related to linear algebra but are usually not covered in such courses: exterior algebras, non-Euclidean geometry, topological properties of projective spaces, theory of quadrics (in affine and projective spaces), decomposition of finite abelian groups, and finitely generated periodic modules (similar to Jordan normal forms of linear operators). Mathematical reasoning, theorems, and concepts are illustrated with numerous examples from various fields of mathematics, including differential equations and differential geometry, as well as from mechanics and physics.

Linear Geometry K. W. Gruenberg 2013-12-01 This is essentially a book on linear algebra. But the approach is somewhat unusual in that we emphasise throughout the geometric aspect of the subject. The material is suitable for a course on linear algebra for mathe matics majors at North American Universities in their junior or senior year and at British Universities in their second or third year. However, in view of the structure of undergraduate courses in the United States, it is very possible that, at many institutions, the text may be found more suitable at the beginning graduate level. The book has two aims: to provide a basic course in linear algebra up to, and including, modules over a principal ideal domain; and to explain in rigorous language the intuitively familiar concepts of euclidean, affine, and projective geometry and the relations between them. It is increasingly recognised that linear algebra should be approached from a geometric point of VIew. This applies not only to mathematics majors but also to mathematically-oriented natural scientists and engineers.

Linear Algebra and Geometry Irving Kaplansky 2003-01-01 The author of this text seeks to remedy a common failing in teaching algebra: the neglect of related instruction in geometry. Focusing on inner product spaces, orthogonal similarity, and elements of geometry, this volume is illustrated with an abundance of examples, exercises, and proofs and is suitable for both undergraduate and graduate courses. 1974 edition.

Notes on Geometry Elmer G. Rees 2012-12-06 In recent years, geometry has played a lesser role in undergraduate courses than it has ever done. Nevertheless, it still plays a leading role in mathematics at a higher level. Its central role in the history of mathematics has never been disputed. It is important, therefore, to introduce some geometry into university syllabuses. There are several ways of doing this, it can be incorporated into existing courses that are primarily devoted to other topics, it can be taught at a first year level or it can be taught in higher level courses devoted to differential geometry or to more classical topics. These notes are intended to fill a rather obvious gap in the literature. It treats the classical topics of Euclidean, projective and hyperbolic geometry but uses the material commonly taught to undergraduates: linear algebra, group theory, metric spaces and complex analysis. The notes are based on a course whose aim was two fold, firstly, to introduce the students to some geometry and secondly to deepen their understanding of topics that they have already met. What is required from the earlier material is a familiarity with the main ideas, specific topics that are used are usually redone.

The Role of Nonassociative Algebra in Projective Geometry John R. Faulkner 2014-10-09 There is a particular fascination when two apparently disjoint areas of mathematics turn out to have a meaningful connection to each other. The main goal of this book is to provide a largely self-contained, in-depth account of the linkage between nonassociative algebra and projective planes, with particular emphasis

on octonion planes. There are several new results and many, if not most, of the proofs are new. The development should be accessible to most graduate students and should give them introductions to two areas which are often referenced but not often taught. On the geometric side, the book introduces coordinates in projective planes and relates coordinate properties to transitivity properties of certain automorphisms and to configuration conditions. It also classifies higher-dimensional geometries and determines their automorphisms. The exceptional octonion plane is studied in detail in a geometric context that allows nondivision coordinates. An axiomatic version of that context is also provided. Finally, some connections of nonassociative algebra to other geometries, including buildings, are outlined. On the algebraic side, basic properties of alternative algebras are derived, including the classification of alternative division rings. As tools for the study of the geometries, an axiomatic development of dimension, the basics of quadratic forms, a treatment of homogeneous maps and their polarizations, and a study of norm forms on hermitian matrices over composition algebras are included.

Lectures on Analytic and Projective Geometry Dirk J. Struik 2014-03-05 This undergraduate text develops the geometry of plane and space, leading up to conics and quadrics, within the context of metrical, affine, and projective transformations. 1953 edition.

Exercises in Algebra Alexandra I. Kostrikin 1996-02-09 This book is a collection of exercises for courses in higher algebra, linear algebra and geometry. It is helpful for postgraduate students in checking the solutions and answers to the exercises.

Perspectives on Projective Geometry Jürgen Richter-Gebert 2011-02-04 Projective geometry is one of the most fundamental and at the same time most beautiful branches of geometry. It can be considered the common foundation of many other geometric disciplines like Euclidean geometry, hyperbolic and elliptic geometry or even relativistic space-time geometry. This book offers a comprehensive introduction to this fascinating field and its applications. In particular, it explains how metric concepts may be best understood in projective terms. One of the major themes that appears throughout this book is the beauty of the interplay between geometry, algebra and combinatorics. This book can especially be used as a guide that explains how geometric objects and operations may be most elegantly expressed in algebraic terms, making it a valuable resource for mathematicians, as well as for computer scientists and physicists. The book is based on the author’s experience in implementing geometric software and includes hundreds of high-quality illustrations.

Linear Algebra and Geometry P. K. Suetin 1997-10-01 This advanced textbook on linear algebra and geometry covers a wide range of classical and modern topics. Differing from existing textbooks in approach, the work illustrates the many-sided applications and connections of linear algebra with functional analysis, quantum mechanics and algebraic and differential geometry. The subjects covered in some detail include normed linear spaces, functions of linear operators, the basic structures of quantum mechanics and an introduction to linear programming. Also discussed are Kahler's metic, the theory of Hilbert polynomials, and projective and affine geometries. Unusual in its extensive use of applications in physics to clarify each topic, this comprehensice volume should be of particular interest to advanced undergraduates and graduates in mathematics and physics, and to lecturers in linear and multilinear algebra, linear programming and quantum mechanics.

Projective Geometry Pierre Samuel 1988-09-12 The purpose of this book is to revive some of the beautiful results obtained by various geometers of the 19th century, and to give its readers a taste of concrete algebraic geometry. A good deal of space is devoted to cross-ratios, conics, quadrics, and various interesting curves and surfaces. The fundamentals of projective geometry are efficiently dealt with by using a modest amount of linear algebra. An axiomatic characterization of projective planes is also given. While the topology of projective spaces over real and complex fields is described, and while the geometry of the complex projective libe is applied to the study of circles and Möbius transformations, the book is not restricted to these fields. Interesting properties of projective spaces, conics, and quadrics over finite fields are also given. This book is the first volume in the Readings in Mathematics

sub-series of the UTM. From the reviews: "...The book of P. Samuel thus fills a gap in the literature. It is a little jewel. Starting from a minimal background in algebra, he succeeds in 160 pages in giving a coherent exposition of all of projective geometry. ... one reads this book like a novel. " D.Lazard in Gazette des Mathématiciens#1

Introduction to Projective Geometry C. R. Wylie 2011-09-12 This lucid introductory text offers both an analytic and an axiomatic approach to plane projective geometry. The analytic treatment builds and expands upon students' familiarity with elementary plane analytic geometry and provides a well-motivated approach to projective geometry. Subsequent chapters explore Euclidean and non-Euclidean geometry as specializations of the projective plane, revealing the existence of an infinite number of geometries, each Euclidean in nature but characterized by a different set of distance- and angle-measurement formulas. Outstanding pedagogical features include worked-through examples, introductions and summaries for each topic, and numerous theorems, proofs, and exercises that reinforce each chapter's precepts. Two helpful indexes conclude the text, along with answers to all odd-numbered exercises. In addition to its value to undergraduate students of mathematics, computer science, and secondary mathematics education, this volume provides an excellent reference for computer science professionals.

Complex Geometry Daniel Huybrechts 2005 Easily accessible Includes recent developments Assumes very little knowledge of differentiable manifolds and functional analysis Particular emphasis on topics related to mirror symmetry (SUSY, Kaehler-Einstein metrics, Tian-Todorov lemma)

Methods of Algebraic Geometry: Volume 3 William Vallance Douglas Hodge 1994-05-19 All three volumes of Hodge and Pedoe's classic work have now been reissued. Together, these books give an insight into algebraic geometry that is unique and unsurpassed.

Projective Geometry Louis R. A. Casse 2006-08-03 This lucid and accessible text provides an introductory guide to projective geometry, an area of mathematics concerned with the properties and invariants of geometric figures under projection. Including numerous worked examples and exercises throughout, the book covers axiomatic geometry, field planes and PG(r, F), coordinating a projective plane, non-Desarguesian planes, conics and quadrics in PG(3, F). Assuming familiarity with linear algebra, elementary group theory, partial differentiation and finite fields, as well as some elementary coordinate geometry, this text is ideal for 3rd and 4th year mathematics undergraduates

Geometry Through History Meighan I. Dillon 2018-03-21 Presented as an engaging discourse, this textbook invites readers to delve into the historical origins and uses of geometry. The narrative traces the influence of Euclid’s system of geometry, as developed in his classic text The Elements, through the Arabic period, the modern era in the West, and up to twentieth century mathematics. Axioms and proof methods used by mathematicians from those periods are explored alongside the problems in Euclidean geometry that lead to their work. Students cultivate skills applicable to much of modern mathematics through sections that integrate concepts like projective and hyperbolic geometry with representative proof-based exercises. For its sophisticated account of ancient to modern geometries, this text assumes only a year of college mathematics as it builds towards its conclusion with algebraic curves and quaternions. Euclid’s work has affected geometry for thousands of years, so this text has something to offer to anyone who wants to broaden their appreciation for the field.

Geometry: A Comprehensive Course Dan Pedoe 2013-04-02 Introduction to vector algebra in the plane; circles and coaxial systems; mappings of the Euclidean plane; similitudes, isometries, Moebius transformations, much more. Includes over 500 exercises.

The Four Pillars of Geometry John Stillwell 2005-08-09 This book is unique in that it looks at geometry from 4 different viewpoints - Euclid-style axioms, linear algebra, projective geometry, and groups and their invariants Approach makes the subject accessible to readers of all mathematical tastes, from the visual to the algebraic Abundantly supplemented with figures and exercises

Linear Algebra and Geometry P. K. Suetin 1989-07-14 This advanced textbook on linear algebra and geometry covers a wide range of classical and modern topics. Differing from existing textbooks in approach, the work illustrates the many-sided applications and connections of linear algebra with functional analysis, quantum mechanics and algebraic and differential geometry. The subjects covered in some

Foundations of Projective Geometry Robin Hartshorne 2009 The first geometrical properties of a projective nature were discovered in the third century by Pappus of Alexandria. Filippo Brunelleschi (1404-1472) started investigating the geometry of perspective in 1425. Johannes Kepler (1571-1630) and Gerard Desargues (1591-1661) independently developed the pivotal concept of the "point at infinity." Desargues developed an alternative way of constructing perspective drawings by generalizing the use of vanishing points to include the case when these are infinitely far away. He made Euclidean geometry, where parallel lines are truly parallel, into a special case of an all-encompassing geometric system. Desargues's study on conic sections drew the attention of 16-years old Blaise Pascal and helped him formulate Pascal's theorem. The works of Gaspard Monge at the end of 18th and beginning of 19th century were important for the subsequent development of projective geometry. The work of Desargues was ignored until Michel Chasles chanced upon a handwritten copy in 1845. Meanwhile, Jean-Victor Poncelet had published the foundational treatise on projective geometry in 1822. Poncelet separated the projective properties of objects in individual class and establishing a relationship between metric and projective properties. The non-Euclidean geometries discovered shortly thereafter were eventually demonstrated to have models, such as the Klein model of hyperbolic space, relating to projective geometry.

Algebraic Projective Geometry John Greenlees Semple 1960

Geometry Michele Audin 2012-12-06 Geometry, this very ancient field of study of mathematics, frequently remains too little familiar to students. Michle Audin, professor at the University of Strasbourg, has written a book allowing them to remedy this situation and, starting from linear algebra, extend their knowledge of affine, Euclidean and projective geometry, conic sections and quadrics, curves and surfaces. It includes many nice theorems like the nine-point circle, Feuerbach's theorem, and so on. Everything is presented clearly and rigourously. Each property is proved, examples and exercises illustrate the course content perfectly. Precise hints for most of the exercises are provided at the end of the book. This very comprehensive text is addressed to students at upper undergraduate and Master's level to discover geometry and deepen their knowledge and understanding.

Classical Algebraic Geometry Igor V. Dolgachev 2012-08-16 Algebraic geometry has benefited enormously from the powerful general machinery developed in the latter half of the twentieth century. The cost has been that much of the research of previous generations is in a language unintelligible to modern workers, in particular, the rich legacy of classical algebraic geometry, such as plane algebraic curves of low degree, special algebraic surfaces, theta functions, Cremona transformations, the theory of apolarity and the geometry of lines in projective spaces. The author's contemporary approach makes this legacy accessible to modern algebraic geometers and to others who are interested in applying classical results. The vast bibliography of over 600 references is complemented by an array of exercises that extend or exemplify results given in the book.

Analytic Projective Geometry Eduardo Casas-Alvero 2014 Projective geometry is concerned with the properties of figures that are invariant by projecting and taking sections. It is considered one of the most beautiful parts of geometry and plays a central role because its specializations cover the whole of the affine, Euclidean and non-Euclidean geometries. The natural extension of projective geometry is projective algebraic geometry, a rich and active field of research. The results and techniques of projective geometry are intensively used in computer vision. This book contains a comprehensive presentation of projective geometry, over the real and complex number fields, and its applications to affine and Euclidean geometries. It covers central topics such as linear varieties, cross ratio, duality, projective transformations, quadrics and their classifications--projective, affine and metric--as well as

the more advanced and less usual spaces of quadrics, rational normal curves, line complexes and the classifications of collineations, pencils of quadrics and correlations. Two appendices are devoted to the projective foundations of perspective and to the projective models of plane non-Euclidean geometries. The book uses modern language, is based on linear algebra, and provides complete proofs. Exercises are proposed at the end of each chapter; many of them are beautiful classical results. The material in this book is suitable for courses on projective geometry for undergraduate students, with a working knowledge of a standard first course on linear algebra. The text is a valuable guide to graduate students and researchers working in areas using or related to projective geometry, such as algebraic geometry and computer vision, and to anyone looking for an advanced view of geometry as a whole.

Affine and Projective Geometry M. K. Bennett 2011-02-14 An important new perspective on AFFINE AND PROJECTIVEGEOMETRY This innovative book treats math majors and math education studentsto a fresh look at affine and projective geometry from algebraic,synthetic, and lattice theoretic points of view. Affine and Projective Geometry comes complete with ninetyillustrations, and numerous examples and exercises, coveringmaterial for two semesters of upper-level undergraduatemathematics. The first part of the book deals with the correlationbetween synthetic geometry and linear algebra. In the second part,geometry is used to introduce lattice theory, and the bookculminates with the fundamental theorem of projectivegeometry. While emphasizing affine geometry and its basis in Euclideanconcepts, the book: * Builds an appreciation of the geometric nature of linear algebra * Expands students' understanding of abstract algebra with itsnontraditional, geometry-driven approach * Demonstrates how one branch of mathematics can be used to provetheorems in another * Provides opportunities for further investigation of mathematicsby various means, including historical references at the ends ofchapters Throughout, the text explores geometry's correlation to algebra inways that are meant to foster inquiry and develop mathematicalinsights whether or not one has a background in algebra. Theinsight offered is particularly important for prospective secondaryteachers who must major in the subject they teach to fulfill thelicensing requirements of many states. Affine and ProjectiveGeometry's broad scope and its communicative tone make it an idealchoice for all students and professionals who would like to furthertheir understanding of things mathematical.

Multiple View Geometry in Computer Vision Richard Hartley 2004-03-25 A basic problem in computer vision is to understand the structure of a real world scene given several images of it. Techniques for solving this problem are taken from projective geometry and photogrammetry. Here, the authors cover the geometric principles and their algebraic representation in terms of camera projection matrices, the fundamental matrix and the trifocal tensor. The theory and methods of computation of these entities are discussed with real examples, as is their use in the reconstruction of scenes from multiple images. The new edition features an extended introduction covering the key ideas in the book (which itself has been updated with additional examples and appendices) and significant new results which have appeared since the first edition. Comprehensive background material is provided, so readers familiar with linear algebra and basic numerical methods can understand the projective geometry and estimation algorithms presented, and implement the algorithms directly from the book.

Projective Geometry Elisabetta Fortuna 2016-12-17 This book starts with a concise but rigorous overview of the basic notions of projective geometry, using straightforward and modern language. The goal is not only to establish the notation and terminology used, but also to offer the reader a quick survey of the subject matter. In the second part, the book presents more than 200 solved problems, for many of which several alternative solutions are provided. The level of difficulty of the exercises varies considerably: they range from computations to harder problems of a more theoretical nature, up to some actual complements of the theory. The structure of the text allows the reader to use the solutions of the exercises both to master the basic notions and techniques and to further their knowledge of the subject, thus learning some classical results not covered in the first part of the book. The book addresses the needs of

undergraduate and graduate students in the theoretical and applied sciences, and will especially benefit those readers with a solid grasp of elementary Linear Algebra.

Projective Geometry Albrecht Beutelspacher 1998-01-29 Projective geometry is not only a jewel of mathematics, but has also many applications in modern information and communication science. This book presents the foundations of classical projective and affine geometry as well as its important applications in coding theory and cryptography. It also could serve as a first acquaintance with diagram geometry. Written in clear and contemporary language with an entertaining style and around 200 exercises, examples and hints, this book is ideally suited to be used as a textbook for study in the classroom or on its own.