

PREFACE TO THE SECOND EDITION

The principal change from the first edition is the addition of a new chapter on linear programming. While linear programming is one of the most widely used and successful applications of linear algebra, it rarely appears in a text such as this. In the new Chapter Ten the theoretical basis of the simplex algorithm is carefully explained and its geometrical interpretation is stressed.

Some further applications of linear algebra have been added, for example the use of Jordan normal form to solve systems of linear differential equations and a discussion of extremal values of quadratic forms.

On the theoretical side, the concepts of coset and quotient space are thoroughly explained in Chapter 5. Cosets have useful interpretations as solutions sets of systems of linear equations. In addition the Isomorphisms Theorems for vector spaces are developed in Chapter Six: these shed light on the relationship between subspaces and quotient spaces.

The opportunity has also been taken to add further exercises, revise the exposition in several places and correct a few errors. Hopefully these improvements will increase the usefulness of the book to anyone who needs to have a thorough knowledge of linear algebra and its applications.

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