

Preface

This is a textbook designed for an introductory linear algebra course. While many students may have been exposed to some of the relevant topics (e.g., vectors, matrices, determinants, etc.) it is the author's experience that no such familiarity can be assumed of all students; consequently, this book assumes none.

At several places throughout the text, the symbol \int marks portions that require calculus. If you have taken some introductory calculus course(s) already, you should be able to go through most of these (and solve some of the exercises marked likewise). However, in many instances, knowledge of multivariable calculus is required. If you are going to take such a course in the future, you may want to revisit the respective portion of this text after completing it – doing so is likely to enhance your understanding of both subjects: calculus and linear algebra.

Most odd-numbered exercises are answered in Appendix A. The exceptions are those marked with an asterisk (*). These range from quite easy to fairly challenging, but they generally tend to expect you to go about solving them in a more independent fashion than is the case with most other exercises. Some of these may ask you to prove results that are actually used later in the book.

In many sections you will find exercises in which you are asked if the given statement is true or false (T/F?). In some cases, you will be guided to more specifically

- find an example that matches the given description or explain why this cannot be done ($\exists?$) or
- find if the given statement always holds or find a counterexample ($\forall?$).

Another feature of this text is a deck of cards containing equivalent statements and (on reverse side) their “negatives” located at the end of the book. Throughout the text, we shall continue to build these equivalences up. As more and more statements are added to the list, you may find it helpful to actually cut these out and use them as a manipulative when working with problems requiring them.

The Linear Algebra Toolkit (latookit.com) is an online environment designed by the author to help a student learn to correctly perform the steps involved in some basic linear algebra procedures and to learn why these steps are used. Many of the instances where the Toolkit may be useful are marked by the symbol



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