

# 1

## Linear Equations in Linear Algebra

### 1.1 SOLUTIONS

**Notes:** The key exercises are 7 (or 11 or 12), 19–22, and 25. For brevity, the symbols  $R_1, R_2, \dots$ , stand for row 1 (or equation 1), row 2 (or equation 2), and so on. Additional notes are at the end of the section.

$$1. \quad \begin{array}{l} x_1 + 5x_2 = 7 \\ -2x_1 - 7x_2 = -5 \end{array} \quad \left[ \begin{array}{cc|c} 1 & 5 & 7 \\ -2 & -7 & -5 \end{array} \right]$$

Replace  $R_2$  by  $R_2 + (2)R_1$  and obtain:

$$\begin{array}{l} x_1 + 5x_2 = 7 \\ 3x_2 = 9 \end{array} \quad \left[ \begin{array}{cc|c} 1 & 5 & 7 \\ 0 & 3 & 9 \end{array} \right]$$

Scale  $R_2$  by  $1/3$ :

$$\begin{array}{l} x_1 + 5x_2 = 7 \\ x_2 = 3 \end{array} \quad \left[ \begin{array}{cc|c} 1 & 5 & 7 \\ 0 & 1 & 3 \end{array} \right]$$

Replace  $R_1$  by  $R_1 + (-5)R_2$ :

$$\begin{array}{l} x_1 = -8 \\ x_2 = 3 \end{array} \quad \left[ \begin{array}{cc|c} 1 & 0 & -8 \\ 0 & 1 & 3 \end{array} \right]$$

The solution is  $(x_1, x_2) = (-8, 3)$ , or simply  $(-8, 3)$ .

$$2. \quad \begin{array}{l} 2x_1 + 4x_2 = -4 \\ 5x_1 + 7x_2 = 11 \end{array} \quad \left[ \begin{array}{cc|c} 2 & 4 & -4 \\ 5 & 7 & 11 \end{array} \right]$$

Scale  $R_1$  by  $1/2$  and obtain:

$$\begin{array}{l} x_1 + 2x_2 = -2 \\ 5x_1 + 7x_2 = 11 \end{array} \quad \left[ \begin{array}{cc|c} 1 & 2 & -2 \\ 5 & 7 & 11 \end{array} \right]$$

Replace  $R_2$  by  $R_2 + (-5)R_1$ :

$$\begin{array}{l} x_1 + 2x_2 = -2 \\ -3x_2 = 21 \end{array} \quad \left[ \begin{array}{cc|c} 1 & 2 & -2 \\ 0 & -3 & 21 \end{array} \right]$$

Scale  $R_2$  by  $-1/3$ :

$$\begin{array}{l} x_1 + 2x_2 = -2 \\ x_2 = -7 \end{array} \quad \left[ \begin{array}{cc|c} 1 & 2 & -2 \\ 0 & 1 & -7 \end{array} \right]$$

Replace  $R_1$  by  $R_1 + (-2)R_2$ :

$$\begin{array}{l} x_1 = 12 \\ x_2 = -7 \end{array} \quad \left[ \begin{array}{cc|c} 1 & 0 & 12 \\ 0 & 1 & -7 \end{array} \right]$$

The solution is  $(x_1, x_2) = (12, -7)$ , or simply  $(12, -7)$ .

# Linear Algebra And Its Applications Solution Manual

**Otto Bretscher**



## **Linear Algebra And Its Applications Solution Manual:**

**Student Solutions Manual for Linear Algebra with Applications** Kyle Burke, Otto Bretscher, 2013 This manual contains completely worked out solutions for all the odd numbered exercises in the text

**Linear Algebra with Applications, 3rd Edition** W. Keith Nicholson, 1994

**Instructor's Solutions Manual** Steven J. Leon, 1997

**Instructor's Solutions Manual, Linear Algebra with Applications, Second Edition** Otto Bretscher, 2001-11-15

**Linear Algebra I/S/M Sup** Steven Leon, Prentice Hall, 2004-10-01

**Linear Algebra, Solutions Manual** Richard C.

Penney, 2015-11-30 This Student Solutions Manual to Accompany Linear Algebra Ideas and Applications Fourth Edition contains solutions to the odd numbered problems to further aid in reader comprehension and an Instructor's Solutions Manual inclusive of suggested syllabi is available via written request to the Publisher Both the Student and Instructor Manuals have been enhanced with further discussions of the applications sections which is ideal for readers who wish to obtain a deeper knowledge than that provided by pure algorithmic approaches Linear Algebra Ideas and Applications Fourth Edition provides a unified introduction to linear algebra while reinforcing and emphasizing a conceptual and hands on understanding of the essential ideas Promoting the development of intuition rather than the simple application of methods this book successfully helps readers to understand not only how to implement a technique but why its use is important

*Linear Algebra and Its Applications. Instructor's Solutions Manual* Gilbert / Coonley Strang (Brett / Bulman-Fleming, Andrew), 2006

**Student Solutions Manual to Accompany Linear Algebra with Applications** Gareth

Williams, 2010-03-18

Instructor's Solutions Manual [to Accompany] Linear Algebra and Its Applications, Third Edition

Update [by] David C. Lay David C. Lay, Thomas Polaski, 2006

*Linear Algebra with Applications* Otto Bretscher, 1997

**Course In Linear Algebra With Applications: Solutions To The Exercises** Derek J S Robinson, 1992-11-16 This solution booklet is a supplement to the book A Course in Linear Algebra with Applications It will be useful to lecturers and to students taking the subject since it contains complete solutions to all 283 exercises in the book

**Instructor's Solutions Manual [to] Linear Algebra with Applications, 7E** Steven J. Leon, 2006-01-01

Linear Algebra with Applications.

Alternate Edition Gareth Williams, 2011-08-24 Building upon the sequence of topics of the popular 5th Edition Linear Algebra with Applications Alternate Seventh Edition provides instructors with an alternative presentation of course material In this edition earlier chapters cover systems of linear equations matrices and determinates The vector space  $\mathbb{R}^n$  is introduced in chapter 4 leading directly into general vector spaces and linear transformations This order of topics is ideal for those preparing to use linear equations and matrices in their own fields New exercises and modern real world applications allow students to test themselves on relevant key material and a MATLAB manual included as an appendix provides 29 sections of computational problems

**Linear Algebra with Applications Ssm** Bretscher, 2004-11-01

*Elementary Linear Algebra*

*with Applications, Student Solutions Manual* Howard Anton, Chris Rorres, 2006-02-03 This classic treatment of linear algebra

presents the fundamentals in the clearest possible way examining basic ideas by means of computational examples and geometrical interpretation It proceeds from familiar concepts to the unfamiliar from the concrete to the abstract Readers consistently praise this outstanding text for its expository style and clarity of presentation The applications version features a wide variety of interesting contemporary applications Clear accessible step by step explanations make the material crystal clear Established the intricate thread of relationships between systems of equations matrices determinants vectors linear transformations and eigenvalues *Linear Algebra with Applications* Charles G. Cullen,1997-01-01 **Numerical Linear Algebra with Applications** William Ford,David Stapleton,2025-06-10 Numerical Linear Algebra with Applications Using MATLAB and Octave Second Edition provides practical knowledge on modern computational techniques for the numerical solution of linear algebra problems The book offers a unified presentation of computation basic algorithm analysis and numerical methods to compute solutions Useful to readers regardless of background the text begins with six introductory courses to provide background for those who haven t taken applied or theoretical linear algebra This approach offers a thorough explanation of the issues and methods for practical computing using MATLAB as the vehicle for computation Appropriate for advanced undergraduate and early graduate courses on numerical linear algebra this useful textbook explores numerous applications to engineering and science Features six introductory chapters to provide the required background for readers without coursework in applied or theoretical linear algebra Offers a through discussion of the algorithms necessary for the accurate computation of the solution to the most frequently occurring problems in numerical linear algebra Provides illustrative examples from engineering and science applications Includes online teaching support for qualified instructors Solutions Manual PowerPoint Slides and study materials for students Text examples Algorithms

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