

Text and Software References

Reference Texts

Introductory Linear Algebra

- Anton, H., *Elementary Linear Algebra*, 3rd ed. Wiley, New York, 1981.
- Campbell, S., *Linear Algebra with Applications*. Appleton-Century-Crofts, New York, 1971.
- Gewirtz, A., H. Sitomer, and A. W. Tucker, *Constructive Linear Algebra*. Prentice-Hall, Englewood Cliffs, N.J., 1974.
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- Kumpel, P., and J. Thorpe, *Linear Algebra*. W. B. Saunders, Philadelphia, 1983.
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- Strang, G., *Linear Algebra and Its Applications*, 2nd ed. Academic Press, New York, 1980.
- Williams, G., *Linear Algebra with Applications*. Allyn and Bacon, Boston, 1984.

Freshman-Level Linear Algebra

- Althoen, S., and R. Bumcrot, *Matrix Methods in Finite Mathematics*. W. W. Norton, New York, 1976.
- Brown, J., and D. Sherbert, *Introductory Linear Algebra with Applications*. Prindle, Weber & Schmidt, Boston, 1984.

Applied Linear Algebra

- Helzer, G., *Applied Linear Algebra*. Little, Brown, Boston, 1983.
 Magid, A., *Applied Matrix Models*, Wiley, New York, 1985.
 Noble, B., and J. Daniels, *Applied Linear Algebra*. Prentice-Hall, Englewood Cliffs, N.J., 1977.
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Numerical Analysis

- Cheney, W., and J. Kincaid, *Numerical Methods and Computing*. Brooks/Cole, Monterey, Calif., 1980.
 Conte, S., and C. deBoor, *Elementary Numerical Analysis*. McGraw-Hill, New York, 1978.
 Hildebrand, F., *Introduction to Numerical Analysis*. McGraw-Hill, New York, 1974.
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More Advanced

- Golub, G., and C. VanLoan, *Matrix Computations*. Oxford University Press, New York, 1983.
 Stewart, G., *Introduction to Matrix Computations*. Academic Press, New York, 1973.
 Wilkinson, J., *The Algebraic Eigenvalue Problem*. Oxford University Press, New York, 1965.

Specific Applications

Graphics

- Berger, M., *Computer Graphics*. Benjamin-Cummings, Menlo Park, Calif., 1986.
 Magnenat-Thalman, N., and D. Thalman, *Computer Animation: Theory and Practice*. Springer-Verlag, New York, 1985.
 Preparata, F., and M. Shamos, *Computational Geometry, An Introduction*. Springer-Verlag, New York, 1985.
 Rogers, D., and J. Adams, *Mathematical Elements for Computer Graphics*. McGraw-Hill, New York, 1976.

Linear Models in Statistics

- Dunn, O., and V. Clark, *Applied Statistics: Analysis of Variance and Regression*. Wiley, New York, 1974.
 Graybill, F., *An Introduction to Linear Statistical Models*. McGraw-Hill, New York, 1961.
 Mendelhall, W., *Introduction to Linear Models and the Design and Analysis of Experiments*. Duxbury Press, Belmont, Calif., 1968.

Differential Equations and Other Physical Science Applications

- Braun, M., *Differential Equations and Their Applications: An Introduction to Applied Mathematics*. Springer-Verlag, New York, 1975.
 Noble, B., *Applications of Undergraduate Mathematics in Engineering*. Mathematical Association of America, Washington, D.C., 1967.

Spiegel, M., *Applied Differential Equations*, 3rd ed. Prentice-Hall, Englewood Cliffs, N.J., 1981.

Strang, G., *Introduction to Applied Mathematics*. Wellesley-Cambridge Press, Wellesley, Mass., 1986.

Markov Chains

Hoel, P., S. Port, and C. Stone, *Introduction to Stochastic Processes*. Houghton Mifflin, Boston, 1972.

Kemeny, J., and L. Snell, *Finite Markov Chains*. D. Van Nostrand, New York, 1960.

Growth Models and Recurrence Relations

Goldberg, S., *Introduction to Difference Equations*. Wiley, New York, 1958.

Kemeny, J., and L. Snell, *Mathematical Models in the Social Sciences*. The MIT Press, Cambridge, Mass., 1969.

Linear Programming

Bradley, H., A Hax, and T. Magnanti, *Applied Mathematical Programming*. Addison-Wesley, Reading, Mass., 1977.

Gass, S., *Linear Programming*, 4th ed. McGraw-Hill, New York, 1975.

Hillier, F., and G. Lieberman, *Introduction to Operations Research*, 4th ed. Holden-Day, Oakland, Calif., 1986.

General Applications

Berman, A., and R. Plemmons, *Nonnegative Matrices in the Mathematical Sciences*. Academic Press, New York, 1979.

Gantmacher, F., *Applications of the Theory of Matrices*. Wiley-Interscience, New York, 1963.

For more references, see *A Basic Library List*, published by the Mathematical Association of America, Washington, D.C., 1988.

Matrix Algebra Software

General-Purpose Computer Languages and Computation Packages with Basic Matrix Operations

APL. Reference: See Heltzer's book under "Applied Linear Algebra."

MACSYMA, Symbolics, Inc.

MAPLE, University of Waterloo.

MINITAB. Reference: Ryan, T., et al., *Minitab Student Handbook*. Duxbury Press, Belmont, Calif., 1976.

muMATH (for IBM PC, Apple), The Soft Warehouse (Microsoft).

TRUE BASIC and other versions of the language BASIC that have matrix operations built-in; for example, MATRIX 100, an enhanced BASIC for IBM PCs from Stanford Business Software.

Matrix Computation Packages

GAUSS (IBM PC), Applied Technical Systems.

Linear Algebra Computer Companion (Apple), Allyn and Bacon, Boston.

LIN*KIT (for IBM PC and Apple), Wiley, New York.

MAC (MatrixAlgebraCalculator) (IBM PC, Rainbow), Professor E. Herman, Mathematics Department, Grinnell College, Grinnell, Iowa.

Matrix Calculator (Apple), CONDUIT.

MATRIX (IBM PC, Apple, Macintosh), Decision Science Software.

PC-MATLAB (for IBM PC), The Math Works, Portola Valley, Calif.

The following two packages, designed for larger computers, are the best matrix computation software in existence. PC-MATLAB and MAC use parts of these packages.

EISPACK. Public domain. Reference: Smith, B., et al., *Matrix Eigensystems Routines—EISPACK Guide*, 2nd ed. Springer-Verlag, New York, 1976.

LINPACK. Public domain. Reference: Dongarra J., J. Bunch, C. Moler, and G. Stewart, *LINPACK User's Guide*. SIAM, Philadelphia, 1979.