
MATH 339: LINEAR ALGEBRA

PUBLIC NOTES FOR ANY LINEAR ALGEBRA
COURSE

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Chapter 1

Linear Equations

§1.1 Systems of Linear Equations

§1.2 Row Reduction and Echelon Form

§1.3 Vector Equations

§1.4 The Matrix Equation

§1.5 Solution Sets of Linear Systems

§1.6 Linear Independence

§1.7 Introduction to Linear Transformations

§1.8 The Matrix of a Linear Transformation

Chapter 2

Matrix Algebra

§2.1 Matrix Operations

§2.2 The Inverse of a Matrix

§2.3 Characterizations of Invertible Matrices

§2.4 Partitioned Matrices

§2.5 Matrix Factorizations

§2.6 The Leontief Input-Output Model

§2.7 Applications to Computer Graphics

§2.8 Subspaces of R^n

Chapter 3

Determinants

§3.1 Introduction to Determinants

§3.2 Properties of Determinants

§3.3 Cramer's Rule, Volume, and Linear Transformations

Chapter 4

Vector Spaces

§4.1 Vector Spaces and Subspaces

§4.2 Null Spaces, Column Spaces, and Linear Transformations

§4.3 Linearly Independent Sets and Bases

§4.4 Coordinate Systems

§4.5 The Dimension of a Vector Space

§4.6 Rank

§4.7 Change of Basis

Chapter 5

Eigenvectors

§5.1 Eigenvectors and Eigenvalues

§5.2 The Characteristic Equation

§5.3 Diagonalization