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# Chapter 1

## Introduction to Vectors

### 1.1 Vectors and Linear Combinations

### 1.2 Lengths and Dot Products

### 1.3 Matrices

#### 1.3.1 Linear Equations

#### 1.3.2 The Inverse Matrix

this part is so hard

#### 1.3.3 Cyclic Differences



## Chapter 2

# Solving Linear Equations



## Chapter 3

# Vector Spaces and Subspaces





## Chapter 4

# Orthogonality



## Chapter 5

# Determinants



## Chapter 6

# Eigenvalues and Eigenvectors



## Chapter 7

# Linear Transformations





## Chapter 8

# Applications



## Chapter 9

# Numerical Linear Algebra



## Chapter 10

# Complex Vectors and Matrices