

Linear Algebra!

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Chapter 1

Introduction

1.1 What is Linear Algebra?

If you were to ask the average college student, they'd probably tell you Linear Algebra is a scary place. Matrices, Vectors, cross products — oh my!

1.2 How to Read this Document

Chapter 2

Euclidean Spaces

2.1 Some Terms

2.2 Vector Arithmetic

2.2.1 Vector Addition

2.2.2 Vector Multiplication

The Dot Product

The Cross Product

2.3 Linear Independence

2.4 Spaces

2.4.1 Bases and Dimension

2.4.2 Subspaces

Chapter 3

Matrix Theory

3.1 Matrices as Changes of Bases

3.2 Matrix Arithmetic

3.2.1 Scalars and Matrices

3.2.2 Vectors and Matrices

3.2.3 Matrices and Matrices

3.3 The Determinant

3.4 Eigenvectors and Eigenvalues

Chapter 4

Abstract Vector Spaces

4.1 Definition

4.1.1 Fields

4.1.2 The Vector Space Axioms

4.2 Linear Transformations

4.2.1 Matrices as Linear Transformations

4.3 Inner Product Spaces