

Analysis II

Harsh Prajapati

25.07.26

These notes were prepared between December 2025 and (tentative) (**Last update: January 4, 2026**)

Textbook Recommendations

These books will serve as our main references:

- Herbert Amann, Joachim Escher, Analysis II, Zweite Auflage, Birkhäuser-Verlag, 2006, Basel
- Otto Forster, Florian Lindemann, Analysis 2, 12. Auflage, 2025
- Walter Rudin, Principles of Mathematical Analysis, 3rd. Edition

Other great resources.

- K. Königsberger, Analysis 2, 2002
- W. Walter, Analysis 2, 2002
- Heuser, Lehrbuch der Analysis (Teil 2), 2002
- James R. Munkres, Topology, 2nd. Ed., 2000

Contents

1	Introduction	3
2	Differential Calculus of Several Variables	4
2.1	Vector Spaces	4
2.2	Basis and Dimensions	4
2.3	Direct Sums	4
3	Curve Integral	5
3.1	Matrix Multiplication	5
3.2	Systems of Linear Equations	5
3.3	Matrices and Elementary Row Operations	5
3.4	Row-Reduced Echelon Matrices	5
3.5	Invertible Matrices	5

1 Introduction

2 Differential Calculus of Several Variables

2.1 Vector Spaces

2.2 Basis and Dimensions

2.3 Direct Sums

3 Curve Integral

3.1 Matrix Multiplication

3.2 Systems of Linear Equations

3.3 Matrices and Elementary Row Operations

3.4 Row-Reduced Echelon Matrices

3.5 Invertible Matrices