

Mathematics Atlas

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Chapter 1

Introduction

1.1 Who is this book for?

This book is for everyone. It contains (hopefully) all of mathematics, from the simplest of subjects to the most advanced. It is not meant to be a textbook, but rather a training tool in the journey of discovering and expanding one's mathematical knowledge and experience.

1.2 What is this book about?

This book goes through all of mathematics, from the most basic to the most advanced. It contains the theory and an extensive amount of exercises, some solved and some unsolved. The solved exercises are there to consolidate the theory and the unsolved ones are there to aid in the expansion of their mathematical experience, with the difficulty ranging from easy to difficult.

1.3 How to contribute?

This book is meant to free mathematics from any costs associated with studying it. As such, this project is completely free and available online both as the original LaTeX source and as a PDF file.

If you are a teacher or mathematician (amateur or professional) and you would like to contribute to this project, you can do so in several ways:

- You can send exercises via email. They will be added after a thorough review.
- You can fork this repository on GitHub and create a pull request with your changes.
- You can comment on the GitHub repository with your suggestions.

Chapter 2

Basic Mathematics

2.1 Arithmetic

2.1.1 Short history

2.1.2 Basic Operations

Addition

Subtraction

Multiplication

Division

2.1.3 Advanced Operations

Exponentiation

Roots

2.2 Basic Algebra

2.3 Basic Geometry

Chapter 3

Advanced Mathematics

3.1 Pure Mathematics

3.1.1 Algebra

3.1.2 Calculus and Analysis

3.1.3 Geometry and Topology

3.1.4 Combinatorics

3.1.5 Logic

3.1.6 Number Theory

3.2 Applied Mathematics

3.2.1 Dynamical systems and differential equations

3.2.2 Mathematical physics

3.2.3 Theory of Computation

3.2.4 Information Theory and Signal Processing

3.2.5 Probability and Statistics

3.2.6 Game Theory

3.2.7 Operations Research