

**Bibliographic Reference:** Beligiannis, A. (2016). Basic Algebra Exercises [Undergraduate textbook]. Kallipos, Open Academic Editions. http://dx.doi.org/10.57713/kallipos-712

## Abstract

The book is intended for undergraduate students at Greek universities who are taught a basic algebra course. The book accompanies a standard undergraduate-level basic algebra textbook and aims to help readers through the analytical solution of exercises of varying levels of difficulty, subject matter, and content, to understand the fundamental principles, techniques, and methods of basic algebra. The book is mainly intended for students of mathematics (but also related departments) at Greek universities. The book requires only basic knowledge from other courses, which is summarized, so it can also be used as an aid to understanding the fundamental principles, techniques, and methods of basic algebra by non-specialized readers. It can therefore be used by teachers, students, professionals in the field (professors), and anyone interested in understanding the basic principles of group and ring theory. The

main part of the book is devoted to the analytical solution of exercises concerning two of the most fundamental structures of modern algebra, the group structure and the ring structure, as well as their applications. The book is divided into two parts (group theory and ring theory) and 14 chapters. Each chapter of the book develops, without proof, a concise theory that is used to solve the exercises. This is followed by detailed solutions to exercises at various levels (comprehension exercises, computational exercises. theoretical exercises, exercises that extend known results, etc.) related to the concise theory presented. Some of the exercises are accompanied by comments highlighting their relationship to other exercises, to corresponding theoretical topics or extensions thereof, or with references to the literature. Finally, at the end of each chapter, a series of exercises is proposed for solution.



The Project is funded by the National Development Programme 2021-2025 of the Ministry of Education and Religious Affairs and implemented by the Special Account for Research Funds of the National Technical University of Athens and the Hellenic Academic Libraries Link.

