

Bourbaki, Nicolas

Elements of mathematics. Algebra I. Chapters 1–3. Transl. from the French. Softcover edition of the 2nd printing 1989. (English) [Zbl 0904.00001](#)
Berlin: Springer. xxiii, 709 p. (1998).

It is a remarkable initiative undertaken by Springer-Verlag to have a new softcover edition of the English translation of the famous series “The elements of mathematics” by *Nicolas Bourbaki*. Several generations of mathematicians matured with the myth for a group of young mathematicians, their names covered with mysticism, who decided in a series of volumes to provide a solid foundation for the whole body of modern mathematics. More than 30 years have passed since the appearance of the French original of the first books but nevertheless “The Elements” are still vivid and are one of the main sources for references in many books and papers.

The present volume contains Chapters 1-3 of the second “numbered” book by Bourbaki (I. Theory of sets; II. Algebra; III. General topology; IV. Functions of real variable; V. Topological vector spaces; VI. Integration). Chapter 1 deals with algebraic structures (including monoids, groups, groups with operations, rings and fields). Chapter 2 is devoted to linear algebra (modules, vector spaces, affine and projective spaces, matrices, graded rings and modules). Chapter 3 contains the theory of algebras, graded algebras, tensor products, symmetric and exterior algebras, determinants, norms, traces and derivations, coalgebras (called in the text cogebbras). Each chapter contains a long list of research exercises and historical notes.

Together with the other 6 chapters of Algebra and the books on Commutative algebra and Lie groups and Lie algebras (1998; [Zbl 0904.17001](#)), the text under review is of great value for any mathematician working in the field of algebra or some related topics.

[The 1989 ed. was reviewed in [Zbl 0673.00001](#). For a review of Algebra II (Springer 1990), see [Zbl 0719.12001](#)].

Reviewer: [V.Drensky \(Sofia\)](#)

MSC:

- [00A05](#) Mathematics in general
- [12-01](#) Introductory exposition (textbooks, tutorial papers, etc.) pertaining to field theory
- [15-01](#) Introductory exposition (textbooks, tutorial papers, etc.) pertaining to linear algebra
- [20-01](#) Introductory exposition (textbooks, tutorial papers, etc.) pertaining to group theory
- [16-01](#) Introductory exposition (textbooks, tutorial papers, etc.) pertaining to associative rings and algebras
- [17-01](#) Introductory exposition (textbooks, tutorial papers, etc.) pertaining to nonassociative rings and algebras
- [15A69](#) Multilinear algebra, tensor calculus
- [15A72](#) Vector and tensor algebra, theory of invariants
- [15A75](#) Exterior algebra, Grassmann algebras
- [15A78](#) Other algebras built from modules
- [17D05](#) Alternative rings
- [20E05](#) Free nonabelian groups
- [20F16](#) Solvable groups, supersolvable groups

Cited in **3** Reviews
Cited in **26** Documents

Keywords:

[algebraic structures](#); [groups](#); [rings](#); [fields](#); [algebras](#); [modules](#); [linear algebra](#); [vector spaces](#); [affine spaces](#); [projective spaces](#); [tensor algebras](#); [exterior algebras](#); [determinants](#)