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# Basic Algebra II: Second Edition (Dover Books On Mathematics)





## Synopsis

A classic text and standard reference for a generation, this volume and its companion are the work of an expert algebraist who taught at Yale for more than three decades. Nathan Jacobson's books possess a conceptual and theoretical orientation; in addition to their value as classroom texts, they serve as valuable references.Volume II comprises all of the subjects usually covered in a first-year graduate course in algebra. Topics include categories, universal algebra, modules, basic structure theory of rings, classical representation theory of finite groups, elements of homological algebra with applications, commutative ideal theory, and formally real fields. In addition to the immediate introduction and constant use of categories and functors, it revisits many topics from Volume I with greater depth and sophistication. Exercises appear throughout the text, along with insightful, carefully explained proofs.

### **Book Information**

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## **Customer Reviews**

I knew Nathan Jacobson; for us students he was a towering figure in mathematics, the creator/inventor/discoverer of the (Jacobson) Radical, and the author of Basic Algebra I and II, which even now are looking at me from their places in the bookshelf. Mine are well-thumbed copies, and I didn't even go on to study Algebra. A quick look through the book and you realize that there is a difference between "basic" and "elementary". Elementary is easy. For Jacobson, "basic" means "the things a person needs to know in order to start doing advanced research". Volume I covers

more (shall we say) standard material: Groups, Rings, Modules, Galois Theory, Classical Groups, Algebras, and Boolean Algebras. Volume II revisits some of these topics in much greater detail, and goes beyond them: we go back to put modules and rings under the microscope, then Representation Theory of finite groups, Homological Algebra, Commutative Ideals, Field Theory and Valuation Theory, etc. Of course, these were the topics close to his heart, and he put himself into the book. It is almost an encyclopedia of what there is in Algebra, except that I find it insightful and readable. For example, consider the start of section 4.2 in my edition of the book: "From the point of view that we took in the previous section, the purpose of defining the radical of a ring is to isolate that part of the ring whose elements are mapped into 0 by every irreducible representation of the ring. Accordingly, we introduce the following ..." and the definition of the Jacobson radical follows. So, there you have it: explaining the \*why\* of a definition, and setting up the next topic in a natural way. Crystal clear, and it is like that for the whole book. Mind you, that does not make this an easy book to read.

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