

Narkiewicz, Władysław

Elementary and analytic theory of algebraic numbers. 2nd ed., substantially revised and extended. (English) [Zbl 0717.11045](#)

Berlin etc.: Springer-Verlag; Warszawa: PWN-Polish Scientific Publishers. xiii, 746 p. DM 148.00 (1990).

[For a review of the first edition (1974) see [Zbl 0276.12002](#).]

This is a new edition of a classic work.

From the preface: “Several changes have been made with regard to the first edition. We have added certain theorems, including the structure of finitely generated torsion modules over Dedekind domains in Chapter 1, an improvement of Kronecker’s theorem due to E. Dobrowolski, and Perron’s Theorem on approximations in Chapter 2, Remak’s results on extensions with the defect of units in Chapter 3, the Pellet-Stickelberger theorem and the normal basis theorem in Chapter 4, and Moser’s theorem on Minkowski’s units and the density theorems of Kronecker and Frobenius in Chapter 7. Chapter 8 includes certain material on Abelian fields which was absent in the first edition, including an asymptotic formula for the number of Abelian fields with a given Galois group and bounded conductor, and the Bundschuh-Hock proof of an upper bound for discriminants of imaginary quadratic fields with class-number one. In Chapter 9 we have omitted the results relating to arithmetic functions and instead give an elementary description of the class-group, due to J. Kaczorowski.

The notes at the end of each chapter have been rewritten to take account of the literature up to 1983 and the bibliography has been extended accordingly. Some of the literature appearing in 1984 have been covered as have certain items appearing in 1985 and later....

At the end of the book we present a choice of open problems containing some classical questions and also several problems of more recent vintage. In the first edition this list contained 35 problems, of which 9 have by now been solved. In this edition we have added a further 14.”

As with the first edition, the glory of this book is the Bibliography. Here it extends from page 545 to page 711, in 8 pt type! The author uses his prodigious expertise to provide a word or two in the text about the context for virtually every item in the Bibliography; making this volume far useful than simply a list of publications would be. There is now a substantial Subject Index, as well as a Name Index and Symbol List; making access to these descriptions an easy matter.

It is amazing that a single individual, largely unaided by electronic databases could have produced this volume. Yet Professor Narkiewicz has done it. Again. Awe and gratitude in equal measure are due to him. Bardzo Dziękuję!

Reviewer: [M.Sheingorn](#)

MSC:

- [11Rxx](#) Algebraic number theory: global fields
- [11-01](#) Introductory exposition (textbooks, tutorial papers, etc.) pertaining to number theory
- [11-02](#) Research exposition (monographs, survey articles) pertaining to number theory

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| Cited in 9 Reviews Cited in 140 Documents |
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Keywords:

[torsion modules over Dedekind domains](#); [Kronecker’s theorem](#); [Perron’s Theorem](#); [defect of units](#); [Pellet-Stickelberger theorem](#); [normal basis theorem](#); [Moser’s theorem on Minkowski’s units](#); [density theorems](#); [Abelian fields](#); [asymptotic formula](#); [discriminants of imaginary quadratic fields with class-number one](#); [class-group](#); [Bibliography](#)