section. On the other hand, the concept of stability is mentioned only very briefly at the very end of the chapter.

Each chapter contains a collection of instructive exercises (no hints for the solution are given).

This is a very well written book, and the translation is of excellent quality. The only (but significant) negative feature of the book is the lack of an index.

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Studies in number theory, by W. J. LeVeque (editor). vii+212 pages. M.A.A. Studies in Mathematics, Vol. 6, 1969.

The intent of this book is to illustrate the remarkable breadth of the theory of numbers and of the array of other mathematical theories that have been successfully applied to number theoretic questions. The articles can all be read without extensive prior knowledge of number theory. If the reader wishes to delve deeper into any topic discussed in the book, a lengthy list of references is provided.

The articles are: (1) "A brief survey of Diophantine equations" by W. J. LeVeque, (2) "Diophantine equations: p-adic methods" by D. J. Lewis, (3) "Diophantine decision problems" by J. Robinson, (4) "Computer technology applied to the theory of numbers" by D. H. Lehmer, and (5) "Asymptotic distribution of Beurling's generalized prime numbers" by P. T. Bateman and H. G. Diamond.

Suppose $p=4k+1$ is a prime. Then there exists an a and b such that

$$p = a^2+b^2.$$

On pages 134–135, D. H. Lehmer gives a procedure for determining a and b based on an idea of Hermite. The following unpublished procedure was orally communicated to the reviewer by John Brillhart:

(i) Solve $u^2 \equiv -1 \pmod{p}$, $0<u<p/2$, by first finding a quadratic nonresidue of p (by the Quadratic Reciprocity Law) and then calculating

$$u \equiv n^{(p-1)/4} \pmod{p}.$$

(ii) Carry out the Euclidean algorithm on p and u to the point where the remainders $r_1, r_2, \ldots, r_{m-1}, r_m, r_{m+1}$ are such that

$$r_{m-1}^2 > p > r_m^2.$$

Then

$$p = r_m^2+r_{m+1}^2.$$

This book will provide excellent reading to both the professional and amateur number theorist.

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There are a few typographical errors in the text, but they (and the corresponding corrections) are obvious.

H. London,
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Modern general topology, by Jun-iti Nagata. viii+353 pages. (Bibliotheca Mathematica, Vol. VII.) North-Holland, Amsterdam; Noordhoff, Groningen; Interscience, New York. 1969. U.S. $14.75.

This book rather sharply divides into two parts. The first of them, including the first three chapters, corresponds to a first course on General Topology. It contains an introduction to set theory and definitions of basic concepts of general topology such as topological space, open and closed sets, basis and neighbourhood basis, convergence of nets and filters, continuous mapping, subspace, product space, quotient space, inverse limit space, separation axioms, axioms of countability, connected, compact, paracompact, fully normal, metric spaces, together with numerous easy consequences of the definitions.

While both subject and methods of this first part are rather elementary, the second part, consisting of the last four chapters, gives account of a series of various special topics, a considerable part of which dates from the last ten or fifteen years and was never treated in a monography till now. Thus this second part perfectly justifies the title of the book.

Ch. IV begins with Tychonoff's theorem on the product of compact spaces, then deals with the theory of Stone–Čech's, Wallman's and, more generally, Shanin's compactifications. Kaplansky's theorem on the lattice of continuous real functions on a compact Hausdorff space is proved together with some corollaries, and the chapter ends with a short account on sequentially compact, countably compact, pseudo-compact, real-compact and k-spaces.

In Ch. V, we find various characterizations of paracompact spaces, among them A. H. Stone's theorem on the coincidence of paracompactness and full normality for T_2-spaces, further the characterizations by the existence of a cushioned or a σ-cushioned open or a σ-closure-preserving open refinement for each open covering. As a corollary, we get the theorem on the paracompactness of closed continuous images of paracompact T_2-spaces. Then various characterizations of countably paracompact normal spaces follow as well as basic facts on strongly paracompact spaces. Finally, we find the characterization of paracompact T_2- (countably paracompact, normal) spaces by the property that the product of the given space with every compact T_2-space (a closed interval) is normal.

Ch. VI deals with metrizable spaces and some generalizations of them. First of all, various characterizations of metrizable spaces are presented, among them the famous metrization theorems of Alexandroff and Urysohn, the author and Smirnov,

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