quality, particularly for small- and medium-size samples. Two major assets of the
approach are the easiness of the application and the fact that it gives 'exact' results,
i.e., the exact match of the selected confidence level or significance level.

The authors provide a set of tables enabling the reader to apply the proposed
approach as a simple look-up procedure. Part V of the book contains the tables for
sample sizes up to 100 and a complete set for sizes up to 1000 is given on an
accompanying CD-ROM. The tables and the operation with them is explained as
Part III of the text. Examples, partly drawn from the literature, are used in Part VI to
illustrate the approach for real-life data.

Different groups of readers are likely to benefit from this handbook. For those
interested in the theory, Part II explains its details. For readers only interested in the
applications, Part II can be skipped without hampering the overall understanding of
the approach.

The book is easy to read, the language is clear and expressive. It would be
helpful if the content of the chapters was summarised in a paragraph or two at the
beginning or the end of the chapter. The theoretical details are given with
mathematical rigour assuming a basic mathematical background from the reader.
Erudite accounts of the historical aspects of stochastics and the enlightening debates
on some controversial viewpoints add to the handbook's appeal.

LUDMILA I. KUNCHEVA

School of Informatics, University of Wales, Bangor LL57 1UT

Equations in mathematical physics: a practical course, by Victor P. Pikulin and

This book is a translation of a Russian original which, it is stated in the preface,
is addressed to students of technology institutes in order to treat the basic methods of
simple problems of classical mathematical physics. In the introduction, the authors
discuss the types of problem involved and give a brief account of the types of
equations discussed. There are three chapters in the book, each being followed by a
set of exercises and the answers thereto.

The first chapter deals with elliptic equations. There is a discussion of problems
associated with Laplace's and Poisson's equations in two and three dimensions and
the Poisson integral for a disc is introduced. Other problems discussed are
associated with the Helmholtz and Proca equations. The usefulness of using the
ideas of conformal mapping for two-dimensional problems is pointed out and the
concepts of Green's functions and the delta function are introduced. There is also a
brief mention of the two-dimensional bi-harmonic equation.

The second chapter is concerned with hyperbolic problems. Amongst the
subjects discussed are travelling waves, the evaluation of particular solutions and the
use of the Fourier and Laplace transforms. (Short tables of some of the most
commonly used transforms of functions are given.) Problems involving one, two
and three space variables are discussed together with a problem which involves the
bi-harmonic operator. Unusually, in a book at this level, there is a discussion of the
Hankel integral transform method. The authors pass on to deal with standing waves
and the oscillations of a loaded string. A point which the authors emphasise is the
superposition principle whereby the solution to a problem is composed of a
particular solution, initially zero, to the differential equation and a complementary
function obeying the initial conditions. One topic, rarely discussed, which is treated
here is the uniqueness theorem. Various conventional problems are discussed.
involving a variety of physical topics; and the ideas of perturbation methods are introduced, one of the examples treated involving non-linearity.

A shorter third chapter is entitled parabolic problems. Here again, a variety of subjects is treated, mostly involving the heat/diffusion equation and solutions are given involving the Fourier and Laplace transform techniques, similar to those involved in the solution of hyperbolic equations. In this chapter, the method of separation of variables is emphasised and there is a section involving \( n \)-dimensional spaces.

The text is followed by a list of references for further reading, (a third of which apparently only appear in Russian) and a far too short index.

The book gives the impression of being written to illustrate methods of solution of partial differential equations rather than the theory; much of the text is in fact the solution of examples from a wide range of physical fields, many of which appear to have been taken from the references. There is little actual bookwork and no references or proofs are given for some of the formulae given. The translation reads well, there being only one or two ‘Russisms’. The book is printed on good quality paper and the general appearance is pleasing. One idea missing in the treatment of Fourier and Laplace transforms is the Faltung which is of great use in solving differential equations. There are one or two misprints which should not cause difficulty, but the formula given on page 185 for the \( n \)th zero of \( J_0(x) \) is wrong.

Considering the book as a whole, I feel that it would not be suitable as a textbook but rather would be useful to supplement lectures or some other textbook. I am afraid that the price (over £60) will, unfortunately, put it out of reach of many libraries and nearly all students, which is a pity.

LL. G. CHAMBERS
Mathematics Division, School of Informatics, University of Wales, Bangor LL57 1UT


The first edition was reviewed by Richard Bridges in Gazette 494 (July 1998). This second edition is revised and updated and claims to meet the subject specifications for AS and A2 level Mathematics, Statistics and Mechanics. It is slightly enlarged and now contains four appendices; hints for exam success, examiners' terms, synoptic assessment and revision lists. The handbook is designed as a dictionary of mathematics but many of the entries contain either worked examples to support the definition, or explanations, or both. Although aimed mainly at AS/A2 level students, it should also be useful to first year undergraduate students.

BUD WINTERIDGE
School of Education, University of Birmingham, Selly Oak B29 6LL
e-mail: d.j.winteridge@bham.ac.uk


This is a book containing much excellent mathematics set against a background of preparing youngsters for Mathematical Olympiads. Andreescu is the current ‘leader’ of the US team for the International Mathematical Olympiad.

The book is split into two main sections: problems and solutions. Each of these has three sub-sections: geometry and trigonometry; algebra and analysis; and number theory and combinatorics. Finally, each of these is split into ten further sub-sections.