when I first studied the Lebesgue theory; such as integrability of continuous functions, that it generalises the Riemann integral, the appropriate fundamental theorem of calculus etc. The second part introduces the applications and attempts to convince the reader that the Lebesgue integral is the natural tool for tackling certain basic problems.

I have several reservations. One is that the book is basically concerned with measures on R^k, which leads to a fundamental loss of clarity in the section on probability theory since path space has infinite dimension. Another difficulty is that there are no exercises. This is a major drawback in a book of this type. I also noted several throwaway remarks where whole subject areas are surveyed in a few lines. For example there are some comments on filtering theory whose value to the beginner is doubtful. Against this I would commend the inclusion of proofs of Heisenberg's inequality, the Riemann-Lebesgue lemma, the individual ergodic theorem, and Liapounoff's theorem.

Do we need another book on integration? The answer is surely no, but books like this are transitional and are to be welcomed. The difficulty lies with a prejudice which retains the Riemann integral as a first year undergraduate essential. In my opinion this can no longer be justified.

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"WORKED EXAMPLES IN MATHEMATICS FOR SCIENTISTS AND ENGINEERS"

By *G. Stephenson*

Published by *Longman*, 1985, Stg £4.95. ISBN 0-582-44684-8

I must confess immediately that I find it difficult to warm to any book aimed at students - whatever its stated objective - which contains no exercises. Students need to be encouraged to be active, not passive, and a collection of worked examples, however well - chosen or elegantly solved (as they generally are in this text), is unlikely to do this. The author sees a need for a book such as this because "lecture courses usually tend to concentrate ... on the theory rather than examples". This may be so, but a quick perusal of standard and popular mathematics textbooks would tend to suggest that the necessity of providing an adequate number of worked examples is well recognised by most lecturers. What we do not always provide, however, are examples relevant to the interests of our listeners, and the book under review is certainly open to criticism in this regard: despite being aimed at scientists and engineers I failed to find even a token reference to an electrical circuit or to Boyle's Law.

Turning to the content of the book, the chapter headings run from "Functions", "Inequalities", "Limits", through "Partial differentiation", "Matrix algebra", "Ordinary differential equations" to "Contour integration", "Fourier transforms" and "Calculus of variations", and the author's purpose is to cover "most of the topics met in ancillary mathematics courses". As well as the worked examples, the book also contains occasional and brief (very brief) synopses of basic results. Most of the examples in the book are a little harder than the general run of examples encountered in standard texts and a number of them have been taken from examination papers set for courses at Imperial College (London University). The text and solutions are always concise, sometimes indeed too concise:

"But the exponential number e is defined by

$$\lim_{k\to\infty} (1 + 1/k)^k$$

Hence $(1 + 1/k)^k < e$." (p. 9)

"A set of functions $f_1(x)$, $f_2(x)$, ..., $f_n(x)$ is linearly independent if $c_1f_1 + c_2f_2 + .. + c_nf_n = 0$ for all x and for values of the constants c_i which are not all zero. Hence the functions are linearly dependent if their Wronskian determinant vanishes." (p. 73)

Two other points caught my eye: the suggestion that the basic result $\lim_{x\to 0} \sin x/x = 1$ be "proved" by l'Hopital's rule (p. 11) and that the result

$$\frac{d}{dx}\int_a^x f(u)du = f(x)$$

be "derived" from a more general formula for $\frac{d}{dx}\int_a^b f(x,u)du$ where a and b are functions of x (p. 27).

The alert and intelligent student will enjoy the book (a good read for a good student?), but the less able student, if he were to follow the suggestion of the author and use this book as a "means of revision for examinations", could well find the experience a little alarming.

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"INTRODUCTION TO GRAPH THEORY" (3RD EDITION)

By *Robin J. Wilson*

Published by *Longman*, Harlow, Essex, 1985, viii + 168 pp.
Stg £5.95. ISBN 0-582-44685-6

"HINTS AND SOLUTIONS MANUAL FOR INTRODUCTION TO GRAPH THEORY"

By *Robin J. Wilson and W.J.G. Wingate*

Published by *Longman*, Harlow, Essex, 1985, 62 pp. ISBN 0-582-44703-8

Make no mistake - graph theory is coming! Computer science departments are realizing that the traditional calculus sequence is largely irrelevant to their needs. They are beginning to demand its replacement by various topics from discrete mathematics. Among these, graph theory comes high on the list. Given the large numbers of students which computing now attracts, mathematics departments can expect a lot of pressure to teach graphs (the non-calculus type). Since Euler first begat graph theory in Konigsberg in 1736, it has been a relatively minor branch of mathematics (the first textbook didn't appear until 1936). Today, 250 years on, it's finding its feet.

Wilson approaches his subject from a theoretical rather than an applied viewpoint. Proofs are generally given, except for some deeper results where a reference is supplied instead. The arguments are usually clear, two exceptions being those of Corollary 13D and Theorem 13G on pages 67 and 68 respectively, where some elaboration is needed. The style is pleasant and holds the reader's interest.

Most of the nine chapters contain a short section on applications. These sections go a long way towards justifying