Mathematical Discovery, vol. II, by George Polya. Wiley, New York, 1965. xxii + 191 pages. $5.50.

The main concern in this book is to "analyze generally the ways and means of discovery". It is more "philosophical and discursive" than volume I, which was reviewed earlier in this Bulletin (vol. 6 (1963), p.288). One of the later chapters is a reprint of earlier articles giving the author's views on the learning process, teaching, and the preparation of teachers. The book would perhaps be of interest to students in a mathematics methods course.

J. W. Moon, University of Alberta, Edmonton

University Mathematics, I, by J.R. Britton, R.B. Kreigh and L.W. Rutland. Freeman and Co., San Francisco, 1965. xiii + 662 pages. $9.50.

This book falls fairly naturally into two parts. Chapters 8-15 give an account of the elementary calculus, covering what is by now a fairly standard range of topics (from limits to "formal integration"), but with a clarity of writing and freedom from trivial errors which is definitely non-standard.

The first part fills in the foundations, touching on logic, axiomatics, set-theory, the number-system (opportunity is taken to mention rings and fields), the algebra of rational functions and the theory of equations, the number-line, cartesian coördinates, vectors, and trigonometrical functions. Throughout this part the authors seem to have chosen exactly the right compromise between intelligibility and rigour, (i.e. the reviewer would have chosen the same level) except in their treatment of polynomials and angular measure. A polynomial is described as an "expression" of the familiar form in which the coefficients are numbers in a specified field. The word "expression" is left undefined and the indeterminate $\underline{x}$ unexplained; this presents a sad contrast with the careful explanation of such things as "open sentences" that have gone before.

Angular measure is defined in terms of arc-length, and it is a slight shock to find this concept taken for granted, in contrast to the careful take-nothing-for-granted approach used for lengths of line-segments. (It is, of course, quite easy to define angular measure in terms of area - as in Hardy's "Pure Mathematics".)

In the second part of the book there is one common blemish (the uniqueness of the limit of a given function at a given point is taken for granted) and one uncommon one - "tangent" is given, as is right and proper, a geometrical definition. But "slope of tangent" is also defined - quite separately (and analytically). The second definition should be replaced by a proof that, using the first definition, the slope of a tangent is given by a derivative. The definition of "differential" given is the logically invalid one in terms of increment. The authors are, rightly, uneasy over the notation for "indefinite integrals"; one would wish that they had been a little more uneasy and had refused to use it. The reviewer will guarantee that this refusal causes in practice absolutely no inconvenience.

After these small and detailed criticisms, let me repeat that, in clarity and accuracy the book is, taken as a whole, well above average.

H.A. Thurston, University of British Columbia

University Mathematics, II, by J.R. Britton, R.B. Kreigh and L.W. Rutland. Freeman and Co., San Francisco, 1965. xii + 650 pages. $9.50.

This volume continues on the same style as volume I (already reviewed). It covers coördinate geometry and linear algebra in three dimensions, vector functions, partial differentiation (with well-laid topological foundations, but a poor - though common - notation for partial derivatives), multiple integration, series, exact and linear differential equations, including LaPlace transforms, and a little theory of probability.

H.A. Thurston, University of British Columbia

Number-systems, A Modern Introduction, by Mervin L. Keedy. Addison-Wesley, 1965. ix + 226 pages. $6.50.

It is perhaps a little unfair to the author not to be more enthusiastic about this book, but while it covers the structure of the real number-system adequately, it does not seem to add anything to what is already available. The reviewer doubts whether the student who will read this type of book will benefit by working through seventy-five "Review practice exercises" like "add 7 + (-1)"; "subtract 17-3"; or "divide $14^{-3} \div 14^{-5}$".

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