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.

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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 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