mathematics as a tool for solving physics problems." This statement disarms the reviewer who must admit that the text is a lively written account of fundamental notions, techniques and many applications of complex functions to problems in engineering and science. Besides the usual fare there are "delta-functions", elliptic functions, Fourier series, Laplace and Fourier transformations and a good account of conformal mapping. Many-valued functions are present, too.

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Calculus and Analytic Geometry, by Melcher P. Fobes and Ruth B. Smyth, Vol. 1 and 2 (660 and 450 pages respectively). Prentice-Hall, 1963.

Texts on this topic have converged so strongly that a complete description of a new one is pointless: indications of variations from the norm and of the style should suffice.

The style can best be shown by typical quotations. The chapter on differential equations states: "Perhaps the most useful way for us to introduce the problems posed by differential equations is to see how one comes into being. You have long ago studied the reflector property of the parabola and learned its use. Good!" And later, when a differential equation has been set up: "There is a parallel with algebraic equations here. An equation like $5x^3 + 2x^2 + 7x - 1 = 9$ says that after a number $\underline{x}$ has been operated on by a lot of different processes ... it has been transformed into 9. And you are asked to undo all these operations and produce the original $\underline{x}$".

Good points are the care taken when squaring equations and in dealing with angles from one line to another; an appealing and succinct explanation of what is meant by speed; and care in calculations to a given number of decimal places (not the "use a couple of extra places, round off, and hope for the best" technique). The Riemann integral is treated in its own right, with area as an immediate application (and work as another). However, area is defined by an integral of the form $\int_a^b f(x) \cdot dx$, which is unsound for two reasons: it defines areas only of regions of rather special shapes (leaving the area of a circle, in particular, undefined); and it does not make it clear that the area of a given figure is independent of the coordinate-system which must be set up in order to form the integral.

The indefinite integral $\int f(x) \cdot dx$ is defined to be the set of all antiderivatives of $\underline{f}$. However, the authors immediately lose sight of their definition and treat the indefinite integral not as a set of functions, but as a function, or sometimes as the value of a function.

The authors overemphasize the ordered-pair definition of a function. We do not, when teaching fractions in kindergarten, tell the children that a rational number is an equivalence-class of ordered pairs of integers, true though this may be, and proud though we may be of knowing it. Similarly, the beginner in calculus needs to know the following fact about a function: that to define $\underline{f}$ adequately we must say, for each $\underline{x}$, whether or not $f(x)$ is defined, and, if so, what it is; but the underlying ordered-pair construction is, at elementary level, a distraction, especially when it leads to the following clumsy definition of derivative.

After defining $f'(x_1)$ in the usual way, the authors continue: "The derivative of the function $\underline{f}$ given by $y = f(x)$ is the function f' consisting of the ordered pairs $(x, f'(x))$ for all values of $\underline{x}$ in D [the domain of f] at which $\underline{f}$ has a derivative as defined in the first part of this definition."

But these points are details: no book is perfect, and this one is, taken all in all, one of the best at its particular level. The diagrams, in particular, are excellent.

Hugh A. Thurston, University of British Columbia

A Course of Mathematical Analysis, by A. F. Bermant. Macmillan Co. of Canada, 1963. Vol. I: xiv + 493 pages. $11.00. Vol. II: xi + 374 pages. $10.00.

This is a translation of the second (revised) edition of a book designed for use in higher technical schools in Russia. Its Eastern provenance obtrudes itself when we find ourselves reading, in the introduction, a quotation from Engels, "The Cartesian variable represented a turning-point in mathematics. Thanks to this, motion and dialectic made their appearance in mathematics."

The first chapter, on functions, is longer and more thorough than usual, classifying functions into explicit and implicit, algebraic and transcendental, single-valued and many-valued; giving a definition of "elementary function"; considering oddness and evenness, symmetry, inverses, linearity and periodicity.

Limits are defined in terms of "infinitesimals" and "infinitely large magnitudes", and lead to theorems about the bounds of a continuous function in a closed interval, and the uniformity of this continuity. Differentiation is motivated not only by velocity, but also by linear density and specific heat (a good point, in the reviewer's opinion). The weakness of the treatment by infinitesimals and differentials is shown when the formula for arc-length of the curve $y = f(x)$ is found without apparently requiring continuity of $f'(x)$. Investigation of