A frequently recurring difficulty permeates phases of our undergraduate teaching. Even our better students are puzzled and annoyed by a situation which could easily be improved. We are at fault in that we do not formally classify the distinct domains (types of function or types of numbers) in which we operate. Thus we state successively that $1/\log x$ cannot be integrated; that the differential equation $y'-1/\log x=0$ can be solved whereas others more complicated cannot; finally that all differential equations can be solved by series. Likewise, in the equation $y+\log y=x$ it is impossible to solve for y; yet the equation defines y as a function of x and hence we may compute dy/dx with the help of standard theorems on differentiation. The worst paradox of all is that since $x^2+1=0$ has no root, we must use a special symbol to represent it. It would seem that our students would thrive better if we gave less attention to the introduction of ϵ and δ and devoted a little time to the discussion of these questions. One ventures the prediction that future texts in the calculus will carry out such a program explicitly. The publication of *Integration in finite terms* may accelerate this very desirable end by making the Liouville theory current coin in mathematical circles.

E. R. LORCH

Matrix and tensor calculus with applications to mechanics, elasticity and aeronautics. By A. D. Michal. (Galcit Aeronautical series.) New York, Wiley; London, Chapman and Hall, 1947. 13+132 pp. $3.00.

The author states in the preface that the purpose of his book is "to give the reader a working knowledge of matrix calculus and tensor calculus, which he may apply to his own field." To accomplish that much in 130 pages is a difficult problem. Professor Michal attempts to solve it by omitting many proofs and by restricting severely the material presented. Thus several basic notions (for example, characteristic vectors of a matrix) are not mentioned. These omissions are partly compensated for by numerous *Notes* collected at the end of the volume and by an extensive bibliography. On the other hand, this book contains information on some non-standard topics. These include the theory of "multiple-point tensor fields" (originated by the author two decades ago), and a tensor treatment of the boundary layer theory (due to Lin).

The book consists of two largely independent parts, one dealing with matrices, the other with tensors. Each part begins with the fundamental definitions and theorems. Further mathematical concepts are introduced in connection with concrete applications which range over various fields of mechanics. While no problem is pursued