Equations, Handbook of Mathematical Psychology, vol. 3, pp. 487-513, Wiley, New York, 1965) and J. Aczel (Lectures on Functional Equations and Their Applications, Academic Press, New York, 1966; First, German, edition Birkhauser, Basel, 1961). (The nearest to the topic of functional equations in this sense in the present Proceedings is the paper of W.A. Harris Jr. and J.W. Tolle on a nonlinear finite difference equation!).

J. Aczel, University of Waterloo

Linear Algebra, 3rd edition (Die Grundlehren der mathematischen Wissenschaften, Vol. 97), by W.H. Greub. Springer-Verlag, New York, Inc. 1967. ix + 434 pages. $9.80 U.S.

Multilinear Algebra (Die Grundlehren der mathematischen Wissenschaften, Vol. 136), by W.H. Greub. Springer-Verlag, New York, Inc. 1967. x + 224 pages. $8.00 U.S.

These two books are an expansion of the author's Linear Algebra 2nd edition, with the material concerning tensor algebras and multilinear functions now appearing in a separate volume. This edition of Linear Algebra contains many new topics while preserving the axiomatic spirit of earlier ones. Chapters V (Algebras) and VI (Gradations and homology) are entirely new and prerequisites for Chapter II of Multilinear Algebra where the tensor products of vector spaces with additional structure (e.g., algebras, graded algebras and vector spaces, differential spaces) are discussed. Other new additions include a chapter of facts about polynomial algebras over a field (to be generalized in the second volume) which is immediately used in the new concluding chapter entitled "Theory of a linear transformation". Semisimple transformations are introduced there and proof offered that every linear transformation is the sum of a semisimple and nilpotent one. The restriction of the 2nd edition to vector spaces of finite dimension has been removed in the 3rd except for those theorems which do indeed fail when the dimension is infinite.

Multilinear Algebra opens with a decree that all fields are "... fixed, but arbitrarily chosen..." throughout chapter I. In no other chapter is the field mentioned although restrictions are obviously needed. (e.g., the definition of the alternator on page 84 requires the underlying field to have characteristic greater than the length of the tensor products). On the other hand, by persistent use of the universal properties of tensor products in proofs the condition of finite dimensionality needed in the 2nd edition is now avoided. Chapters V and VI develop the exterior algebra and related themes and should prove useful as a reference for differential geometers. Tensor methods are used to obtain proofs of several classical results (e.g., the Cayley-Hamilton theorem). The polynomial algebra in n indeterminates over a field is constructed and shown isomorphic to the symmetric tensor algebra of an n-dimensional vector space over the same field.

The carefully chosen exercises in each book are rewarding but not trivial or excessively difficult.

Multilinear Algebra has no bibliography and many of its results appear elsewhere with varying degrees of generality. (c.f., N. Bourbaki, "Algèbre multilinéaire" or C. Chevalley, "Fundamental Concepts of Algebra"). Carping aside, however, this is one of the most accessible and well organized sources available in English.

L. J. Cummings, University of Waterloo

Calculus for College Students, M.H. Protter and C.B. Morrey. Addison-Wesley, 1967. 730 pages. $10.75.

This is a book for beginners who have learnt plane analytic geometry in a preceding course. The text is very detailed, almost too much so, and deals with the topics usually taught in any elementary Calculus course.

There is a liberal amount of problems and exercises, including physical applications; two chapters on vectors in two and three dimensions and a chapter on solid analytic geometry. Since the text leads up to double integrals and infinite series it can be used for a two-years course in Calculus.

The printing is very good and the many illustrations are nicely executed.

Hanna Schwerdtfeger, McGill University

Formulaire pour le Calcul Opérationnel, by V.A. Ditkin and A.P. Prudnikov. Masson, Paris, 1967. 468 pages.

The work consists of a comprehensive collection of operational transforms organized as follows:

Chapter 1. Direct one-dimensional transforms (158 pages).
Chapter 2. Inverse one-dimensional transforms (202 pages).
Chapter 3. Direct two-dimensional transforms (38 pages).
Chapter 4. Inverse two-dimensional transforms (40 pages).

Although tables of one-dimensional and two-dimensional transforms are separately available in a number of publications, it is of considerable usefulness to have them collected under one cover. A short summary of the basic properties of the two-dimensional operational calculus may be found in the same author's monograph "Operational Calculus in Two Variables and its Applications", Pergamon Press, 1962. It should be noted that the tables are based on the p-multiplied version of the Laplace transform. To the author's bibliography of existing tables may be added the recent compilation of Roberts and Kaufman, "Table of Laplace Transforms", W.B. Saunders, 1966.

H. Kaufman, McGill University