

Algebră Superioară (Higher Algebra), by Gh. pic. Editura Didactică si Pedagogică, Bucarest, 1966.

This book, written in Rumanian, contains material taught over the past ten years at the universities in Cluj and Bucarest to first year students in the analysis course. In part it covers the curriculum laid down by the Ministry of Education for the programme in analysis. The book contains 478 pages on good paper between hard covers and costs 21,80 Lei, which at tourists' rate of exchange is \$1.21. (American).

Professor Pic, who lectures at the Babeş-Bolyai University in Cluj, told me that the first seven chapters, which are entitled, Fundamental Structures of Algebra, Determinants and their applications, Elements of the Theory of Matrices, Vector Spaces, Linear Transformations, Bilinear, Hermitian and quadratic forms, and The existence of roots of a polynomial and its consequences, and are contained in pp.5-284, form the core of the first year algebra for analysts. This core is usually supplemented by material from the remaining six chapters: Resultants (of polynomials), Transformations of equations, Abelian equations, Separation of roots, Geometry of polynomials, Effective methods for calculating the roots of a polynomial.

These latter chapters provide a large body of information about polynomials and their roots which, to the reviewer's knowledge, is not available in any other text on this level. The proofs are all of an elementary nature which would be fully understandable to a second year mathematics student in Canada (were he in possession of a Rumanian-English dictionary). In Chapter 7, Professor Pic gives an elementary proof of the Fundamental Theorem of Algebra in which he uses only simple facts about real numbers.

The first six chapters provide good foundation in the fundamental notions of algebra, in general, and linear algebra, in particular. Some of the topics included are group rings, fields, lattices, isomorphism, homomorphism, vector spaces, proper values and proper vectors of a linear transformation, and canonical forms to name but a few.

Professor Pic's book is an indication of the high level of mathematical education achieved in the universities of the Socialist Republic of Rumania.

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Elementary Vector Algebra, by A.M. MacBeath. Oxford University Press, Toronto, 1966. 136 pages. \$2.10. (Canadian).

This little book is a careful and thorough account of vector algebra in 3-dimensional euclidean space with applications to the geometry of straight lines, planes, and spherical surfaces. To quote from the Preface: "The approach is geometrical and non-axiomatic, intuitively acceptable properties of 3-dimensional euclidean space being assumed without proof