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This volume, compiled by the editors on behalf of the Linear Algebra Curriculum Study Group, is for instructors and students of linear algebra as well as all those interested in the ideas of elementary linear algebra. We have noticed, through attendance at special sessions organized at the Joint Annual Meetings and through talks given at other conferences and universities, that there is broad and sustained interest in the content of undergraduate linear algebra courses.

Since the course became a centerpiece of the mathematics curriculum, beginning around 1960, new topics and new treatments have gradually reshaped it, with noticeably greater evolution than in calculus courses. In addition, current courses are often taught by those not trained in the subject or by those who learned linear algebra in a course rather different from the present one. In this setting, it is not surprising that there is considerable interest in the content and subtleties of ideas in the linear algebra course and in a perspective based upon what lies just beyond. With this in mind, we have selected 74 items and an array of problems, some previously published and some submitted in response to our request for such items. We hope that these will provide a useful background and alternative techniques for instructors, sources of enrichment projects and extended problems for teachers and students, impetus for further textbook evolution to writers, and the enjoyment of discovery to others.

The Linear Algebra Curriculum Study Group (LACSG) began with a special session, at the January 1990 Joint Annual Meetings, focusing upon the elementary linear algebra course. This session was organized by Duane Porter, following upon an NSF-sponsored Rocky Mountain Mathematics Consortium Lecture Series given by Charles Johnson at the University of Wyoming. David Carlson and David Lay were panel members for that session. With NSF encouragement and support, these four organized a five-day workshop held at the College of William and Mary in August, 1990. The goal was to initiate substantial and sustained national interest in improving the undergraduate linear algebra curriculum. The workshop panel was broadly based, both geographically and with regard to the nature of institutions represented. In addition, consultants from client disciplines described the role of linear algebra in their areas and suggested ways in which the curriculum could be improved from their perspective.

Preliminary versions of LACSG recommendations were completed at this workshop and widely circulated for comment. After receiving comments and with the benefit of much discussion, a version was published in 1993. This was followed by a

Even in our age of calculators and computers, we still need problems that will help students develop fundamental skills and give them a sense of progress in their study. These problems must be phrased differently, however, than the traditional lists of the past. At the very least, they cannot be rendered trivial by available electronic aids; at best they should make use of such aids to lead the student to greater understanding.

This volume contains problems written with these objectives in mind. The authors have tried to emphasize conceptual understanding over rote drill. Although many of the problems require the use of a calculator or computer algebra system, most do not. A deliberate effort has been made to stress graphs and tables, rather than rules to define function, in the belief that "real world" data generally come that way.

The problems are organized

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