BOOK REVIEWS

WILLIAM JOHNSTON and ALEX M. MCALLISTER, **Transition to Advanced Mathematics: A Survey Course**, xx+745 pages, Oxford University Press, Oxford, 2009.

The *Transition to Advanced Mathematics: A Survey Course* is a textbook designed for undergraduate students bridging the gap between introductory level courses such as calculus and more theoretical upper-level curricula. Its main goals are to help students develop proper mathematical reasoning skills, to acquire the ability to read and understand rigorous mathematical arguments, and to learn to communicate mathematical ideas clearly and precisely. At the same time, the book may provide students with a comprehensive introduction to advanced topics including both the continuous and discrete aspects of modern mathematics. The contents are diverse, the book has chapters on most major mathematical subjects such as mathematical logic, abstract algebra, number theory, real analysis, probability and statistics, graph theory, and complex analysis. The text is intended to serve as the basis for a one-semester course, therefore its richness of content provides the instructor with great flexibility to select topics depending on the needs of the particular departmental program. The chapters are designed in a way that most of them are self-contained. The book has a flow chart that gives suggestions as to how the chapters are related but this does not necessarily have to be followed.

Every chapter follows the same design. There are embedded short questions in the text to explain basic concepts, reading questions that serve as a pedagogical tool to encourage students to read the section before class. At the end of each chapter there are 70 carefully selected exercises grouped according to topics and ranging from simple to quite advanced. Every chapter includes a section that presents applications of the concepts under consideration. Finally, chapters are concluded with notes on the history and philosophy of mathematics.

In summary, the *Transition to Advanced Mathematics* is an ambitious book that can be used by instructors in a large variety of ways to help undergraduate students in the transition from computations and algorithms towards advanced mathematics by fundamentally changing their perspective on the world of mathematics.

Ferenc Fodor (Szeged)