

18[41-00]—*Selected topics in approximation and computation*, by Marek A. Kowalski, Krzysztof A. Sikorski and Frank Stenger, Oxford University Press, Oxford, 1995, xiv + 349 pp., 24 cm, \$65.00

This monograph presents results of the three authors' scientific research in their broader approximation theoretical context. The selected topics indicated in the title are approximation by Sinc functions, moment problems, n -widths, and s -numbers. The book is intended as a self-contained introduction for researchers and students in approximation theory, providing a total of 180 exercises to deepen the reader's understanding of the subject matter.

The text is organized in 8 chapters, with a preface at the beginning, and an index at the end of the book. Each chapter consists of several sections, the last of which are devoted to annotations, historical notes and references. Each section in turn contains subsections as well as the relevant exercises.

Chapter 1 provides the necessary basic material in classical approximation, both in inner product spaces and in the uniform norm. A short introduction to polynomial and general splines is given in Chapter 2. As a centerpiece of the monograph, approximation by Sinc and Sinc-like methods is studied in Chapters 3 and 4, including derivatives, integrals and convolutions of Sinc functions. Chapter 5 deals with moment problems, again including Sinc functions, while Chapter 6 is concerned with n -widths and s -numbers. Complexity questions are the issue for Chapter 7, in which a theory of optimal computational methods for nonlinear approximation problems is developed. Finally, in Chapter 8, some applications are treated, namely Sinc solutions of Burgers' equation, relations of n -widths to signal recovery, and a nonlinear zero finding problem for smooth functions.

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