17[41–02, 65–02].—WILL LIGHT (Editor), *Advances in Numerical Analysis*, Vol. II: *Wavelets, Subdivision Algorithms, and Radial Basis Functions*, Clarendon Press, Oxford, 1992, viii+210 pp., 24 cm. Price $49.95.

This volume is devoted to three major topics in theoretical multivariate approximation. It contains three chapters, each reflecting a course of lectures at the Fourth Summer School in Numerical Analysis, University of Lancaster, 1990. The authors-lecturers and titles are as follows. 1. Charles K. Chui, "Wavelets and Spline Interpolation" (32 pages); 2. N. Dyn, "Subdivision Schemes in Computer-Aided Geometric Design" (63 pages); 3. M. J. D. Powell, "The Theory of Radial Basis Function Approximation in 1990" (106 pages). As explained in the preface, the exposition in the lectures (and the chapters) was to be "pitched at such a level that researchers and graduate students could both gain something useful from the courses". The level of expository writing is high, and the volume can be recommended for introducing the reader rapidly to the subjects addressed, and bringing her up to date in each.

E. W. C.

18[65–01, 65N38].—GOONG CHEN & JIANXIN ZHOU, *Boundary Element Methods*, Computational Mathematics and Applications, Academic Press, London, 1992, xx+646 pp., $23\frac{1}{2}$ cm. Price $87.00.

The object of the book is to present both the mathematical and the numerical background involved in the study of boundary integral methods. The authors have selected and synthetized, from many authors and books, all the tools which are necessary for a study of the subject.

The first three chapters contain a digest of the essential tools in functional analysis needed:

– Introduction to Sobolev spaces with the essential results (including some proofs)

– Sketch of the theory of distribution with many examples, including most of the usual finite part integrals.

In Chapter 4, they introduce pseudodifferential operators in $\mathbf{R}^n$. These are the classical elliptic ΨDOs considered as operators on Sobolev spaces. Then, in §4.4, they apply this theory to boundary integral operators (multiple-layer potentials for the Laplacian). Surprisingly, their definition of the symbol is wrong (formula (4.66), page 99), and they in fact compute the symbol of the image by the mapping (flattening $\partial\Omega$) of the Laplacian. This operator is different from the Laplacian, but not too much, so that their result is almost correct and the error does not affect the rest of the book. In §4.5, they present the Calderón operator, in a quite general and complicated manner. But the basic results are clearly obtained. They end this chapter with a classical but neat presentation of the Fredholm theory in Sobolev spaces, with some applications to boundary integral equations for the Laplacian.

Chapter 5 is devoted to a presentation of finite element theory with all the classics:

– Variational formulation and Lax-Milgram theorem

– Inf. Sup. conditions