also in the text are two guest chapters on differential geometry, written by W. Boehm.

I have mixed reactions to this book. It is difficult to assess in what capacity the book would be most valuable. It is neither an undergraduate text, teaching curve and surface algorithm design, nor comprehensive enough to be a graduate text. Perhaps, its best use is as a browser to quickly gather working knowledge of some of the approaches taken in this rapidly advancing field.

The exposition is quite clear and understandable. There are also numerous figures and color pictures to add to the clarity. However, I find the book severely lacking in its attempt to provide a unified treatment of the main topics of geometric design. Most of the book deals with parametric Bézier and B-spline curves, with parametric surfaces treated only at the very end. What is even more disappointing is the lack of precise statements, backed up with proofs. Rare mention is made of the more general implicit form of curves and surfaces. Only scant statements are made of the type "A surface may be given by an implicit form $f(x, y, z) = 0$ or, more useful for CAGD, by its parametric form." This statement is never elaborated further in the text.

The introductory Chapters 11 and 21 on Differential Geometry, though well written, lack references where the interested reader may further his study. Theorems such as Meusnier's and Euler's are explained by examples, with no formal statement of the theorems or indication where the proofs may be found.

The book lacks a binding theme and comes across as a potpourri of facts, piled one upon the other. A more modular approach would be highly desirable. Introductory facts about general curves and surfaces, leading to appropriate representations and data structures for them, and followed by fundamental algorithmic paradigms for manipulating those representations, would be a better way to organize the material.

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30[49–06, 65K05, 90Cxx].—MASAO IRI & KUNIO TANABE (Editors), *Mathematical Programming: Recent Developments and Applications*, Mathematics and Its Applications (Japanese Series), Kluwer, Dordrecht, 1989, ix + 382 pp., 23 $\frac{1}{2}$ cm. Price \$139.00/Dfl.290.00.

This volume contains the texts of one Plenary Lecture, two Memorial Lectures (in memory of Martin Beale and L. V. Kantorovich, respectively) and 10 Tutorial-and-Survey Lectures highlighting the state of the art in Mathematical Programming and its applications as of 1988. The lectures were delivered at the 13th International Symposium on Mathematical Programming held on the Kasuga campus of Chuo University, Tokyo, August 29–September 2, 1988.

W. G.

31[68U30].—Erich Kaltofen & Stephen M. Watt (Editors), *Computers and Mathematics*, Springer, 1989, xiii + 326 pp., 24 cm. Price $39.00.

Computers and Mathematics '89 is the third in a series of international conferences devoted to the use of computers in mathematics and the mathematical sciences. It was held from June 13–17, 1989, at the Massachusetts Institute of Technology. This volume contains 36 papers covering a wide range of topics on mathematical computing. The main subject areas covered include symbolic computation (symbolic integration, computer-enhanced analysis, expert systems for learning mathematics), numerical analysis (differential equations, fractals, hyperbolic manifolds, differential geometry), group algorithms (fast group membership testing, cohomology, group representation theory), and numerical algebra (Jordan forms, algebraic varieties, symmetric matrices, quadratic forms, symmetric polynomials). There are also papers on other areas of mathematical computing.

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32[11Y40, 68Q40].—Michael Pohst (Editor), *Algorithmic Methods in Algebra and Number Theory*, Academic Press, London, 1987, 135. pp., 24 $\frac{1}{2}$ cm. Price: Softcover $12.50.

This volume is a special issue of the Journal of Symbolic Computation dedicated to H. Zassenhaus on the occasion of his 75th birthday. It includes 14 publications, introducing algorithms from the fields of computational algebra and number theory, such as a principal ideal test in algebraic number fields (J. Buchmann & H. C. Williams), an analytic method of computing the class number of an algebraic number field (C. Eckhardt), a method to resolve Thue inequalities (A. Pethö), a procedure for generating nonsymmetric modular binary forms over $\mathbf{Q}(\sqrt{2})$ (H. Cohn & J. I. Deutsch), and an extension of the LLL-algorithm for integral lattices (M. Pohst). Also, L. Cerlienco et al. and E. Kaltofen address computational aspects of polynomials such as irreducibility testing and computation of their measure. Two special cases of the inverse problem of Galois theory are solved by G. Malle and by H. Matzat & A. Zeh-Marschke, respectively. Other algorithms include methods for determining integral bases of algebraic number fields (E. Maus), constructing maximal orders