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These Proceedings are based on lectures delivered at the symposium on Nonlinear Programming held March 23 and 24, 1975, as part of the American Mathematical Society's annual New York meeting. This event was the ninth in a series of Symposia in Applied Mathematics jointly sponsored by the Society for Industrial and Applied Mathematics and the American Mathematical Society with financial support from the Energy Research and Development Agency (formerly the Atomic Energy Commission) and the National Science Foundation.

The organizing committee for the symposium consisted of R. W. Cottle (chairman), C. E. Lemke, S. M. Robinson, and J. B. Rosen. The committee's intent was to help bring to the attention of a larger mathematical audience some of the history, theory, applications and vigorous research activity of the Nonlinear Programming field. The editors feel that the results included in these Proceedings can be recommended as well to the worker in the field as to the interested initiate.

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During the last decade computational complexity has become one of the most active research areas within the mathematical theory of computation. Workers in computational complexity seek to derive efficient algorithms for computational problems of practical interest, to prove the optimality of particular algorithms relative to well-defined measures of computational efficiency, and to derive general lower bounds on the time or space intrinsically necessary for the performance of computational tasks. The specific problems considered are drawn from diverse areas, including numerical computation, symbolic algebraic computation, combinatorics, computational logic and the manipulation of data structures. The mathematical tools called upon are correspondingly diverse, ranging from algebraic geometry through computability theory. Nevertheless, some characteristic proof techniques and approaches to algorithm construction are emerging as complexity theory matures and strives for unification.

This volume is the proceedings of a symposium held in New York City on April 18 and 19, 1973, under the joint sponsorship of the American Mathematical Society and the Society for Industrial and applied Mathematics.

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The Influence of Computing on Mathematical Research and Education,
Edited by Joseph P. LaSalle

This volume contains seven of the invited addresses and fourteen of the contributed papers that were presented at the joint American Mathematical Society and the Mathematical Association of America Conference on the Influence of Computing on Mathematical Research and Education held at the University of Montana, August 13—24, 1973.

The invited addresses were directed primarily to the influence of the computer on mathematical research and the applications of mathematics and secondarily on what this means for the teaching of mathematics and the education of mathematicians. The contributed papers describe more specifically some experiments in developing courses in mathematics with computing and algorithmic orientations and a few reports on computer influenced research.

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Computational Probability and Statistics by Ulf Grenander

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ISBN: 0-8218-1326-1 BOOKCODE: PSAM/20 PAGES: viii + 205 PRICE: List \$21.20, Member \$15.90

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INDEX TO MATHEMATICS OF COMPUTATION, 1943 – 1969

Classified and Edited by
Yudell L. Luke, Jet Wimp and Wyman Fair

462 + xviii pages; list price \$19.95; institutional member price \$14.96; individual member price \$9.97

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The INDEX TO MATHEMATICS OF COMPUTATION is a compilation, by author and by subject, of all material which has appeared in MATHEMATICS OF COMPUTATION and its predecessor, MATHEMATICAL TABLES AND OTHER AIDS TO COMPUTATION, during the years 1943–1969—twenty-three published volumes. The INDEX contains over 7,000 entries. This is an unusual compilation because of the unique character of the journal which not only publishes research papers, but also publishes reviews of material on mathematics of computation and a table errata section covering a number of other publications. In addition, an unpublished mathematical tables (UMT) file is maintained.

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