## Mathematics of Computation

A journal devoted to advances in numerical analysis, the application of computational methods, mathematical tables, high-speed calculators and other aids to computation


Formerly: Mathematical Tables and other Aids to Computation

## Published Quarterly for the

National Academy of Sciences-National Research Council By the

# Editorial Committee <br> Division of Mathematics <br> National Academy of Sciences-National Research Council <br> Washington, D. C. 

H. Polacher, Chairman, Applied Mathematics Laboratory, David Taylor Model Basin, Washington 7, D. C.
Alan Fletcher, University of Liverpool, Liverpool 3, England
P. C Hammer, University of Wisconsin, Madison 6, Wisconsin

Eugene Isaacson, New York University, New York 3, New York
Y. L. Luke, Midwest Research Institute, Kansas City 10, Missouri

Daniel Shanks, Applied Mathematics Laboratory, David Taylor Model Basin, Washington 7, D. C.
A. H. Taub, University of Illinois, Urbana, Illinois
R. S. Varga, Case Institute of Technology, Cleveland 6, Ohio
J. W. Wrench, Jr., Applied Mathematics Laboratory, David Taylor Model Basin, Washington 7, D. C.
D. M. Young, Computing Center, University of Texas, Austin 12, Texas

## Information to Subscribers

The journal is published quarterly in one volume per year with issues numbered serially since Volume I, Number 1. Starting with January, 1959 subscriptions are $\$ 8.00$ per year, single copies $\$ 2.50$. Back issues are available for most issues. Write for specific information.

Volume I (1943-1945), $\$ 1.00$ per issue.
Volume II (1946-1947), $\$ 1.00$ per issue.
Volume III (1948-1949), $\$ 4.00$ per year (four issues), $\$ 1.25$ per issue.
Volumes IV-XII (1950 through 1958), $\$ 5.00$ per year, $\$ 1.50$ per issue.
Volumes XIII-XV (1959-1961), \$8.00 per year, \$2.50 per issue.

## Microcard Edition

Volumes I-X (1943-1956), Nos. 1-56 are now available on Microcards and may be purchased from the Microcard Foundation, Box 2145, Madison 5, Wisconsin, at a cost of $\$ 20.00$ for the complete set. Succeeding volumes are available on request.

## Information to Contributors

All contributions intended for publication in Mathematics of Computation and all books for review should be addressed to H. Polachek, Technical Director, Applied Mathematics Laboratory, Drvid Taylor Model Basin, Washington 7, D. C. The author may suggest an appropriate editor for his paper. Manuscripts should be typewritten double-spaced in the format used by the journal. For journal abbreviations, see Mathematical Reviews, v. 21, Index, 1960. Authors should submit the original and one copy, and should retain one copy.

Subscriptions, address changes, business communications and payments should be sent to:

American Mathematical Society<br>190 Hope Street<br>Providence 6, Rhode Island<br>Published Quarterly for the

NATIONAL ACADEMY of SCIENCES-NATIONAL RESEARCH COUNCIL By the

AMERICAN MATHEMATICAL SOCIETY
Providence, Rhode Island

# RUSSIAN-ENGLISH DICTIONARY OF MATHEMATICAL TERMS 

Compiled by A. J. Lohwater
in collaboration with S. H. Gould

COMPLETE COVERAGE OF ALL BRANCHES OF MATHEMATICS

15000 definitions
grammar section

288 pages
$\$ 7.70$
$\mathbf{2 5 \%}$ discount to members

## AMERICAN

MATHEMATICAL
SOCIETY

190 Hope Street, Providence 6, Rhode Island

# MATHEMATICAL REVIEWS 

A Journal Containing<br>REVIEWS OF MATHEMATICAL LITERATURE<br>Pure and Applied, of the Entire World<br>With full Subject and Author Indexes

This journal is an indispensable tool for all those who need to keep up with new research in pure and applied mathematics.
Each monthly issue consists of two separately bound parts A and B.
Subjects included in Part B are:

Probability
Statistics
Numerical Methods
Computing Machines
Mechanics of Particles and Systems
Statistical Thermodynamics and Mechanics
Elasticity, Plasticity
Structure of Matter
Fluid Mechanics, Acoustics
Optics, Electromagnetic Theory, Circuits

Classical Thermodynamics, Heat Transfer
Quantum Mechanics
Relativity
Astronomy
Geophysics
Operations Research, Econometrics, Games
Biology and Sociology
Information and Communication Theory
Servomechanisms and Control

Subscriptions are accepted to cover the calendar year only. Two volumes will be published in 1962. List price for two volumes $\$ 100 . \$ 32.00$ to members of the American Mathematical Society.

Send Subscription Orders to

## AMERICAN MATHEMATICAL SOCIETY

190 Hope Street
Providence, Rhode Island

## CLASSIFICATION OF REVIEWS

A. Arithmetical Tables, Mathematical Constants
B. Powers
C. Logarithms
D. Circular Functions
E. Hyperbolic and Exponential Functions
F. Theory of Numbers
G. Higher Algebra
H. Numerical Solution of Equations
I. Finite Differences, Interpolation
J. Summation of Series
K. Statistics
L. Higher Mathematical Functions
M. Integrals
N. Interest and Investment
O. Actuarial Science
P. Engineering
Q. Astronomy
R. Geodesy
S. Physics, Geophysics, Crystallography
T. Chemistry
U. Navigation
V. Aerodynamics, Hydrodynamics, Ballistics
W. Economics and Social Sciences
X. Numerical Analysis and Applied Mathematics
Z. Calculating Machines and Mechanical Computation

# Mathematics of Computation 

## TABLE OF CONTENTS

July 1962
Some Relations and Values for the Generalized Riemann Zeta Function Eldon R. Hansen \& Merrell L. Patrick ..... 265
Euler's Constant to 1271 Places Donald E. Knuth ..... 275
A Calculation of the Number of Lattice Points in the Circle and Sphere W. Fraser \& C. C. Gotlieb ..... 282
Sign Wave Analysis in Matrix Eigenvalue Problems
K. M. Brown \& P. Henrici ..... 291
Acceleration Techniques for Iterated Vector and Matrix Problems P. Wynn ..... 301
Computing Error Bounds in Solving Linear Systems J. Schröder ..... 323
A Note on Finite Difference Methods for Solving the Eigenvalue Problems of Second-Order Differential Equations M. R. Osborne ..... 338
A Method for Computing the Circular Coverage Function
A. R. DiDonato \& M. P. Jarnagin ..... 347
Optimum-Point Formulas for Osculatory and Hyperosculatory Interpolation Herbert E. Salzer ..... 356
Technical Notes and Short Papers
A Heuristic Asymptotic Formula Concerning the Distribution of Prime Numbers Paul T. Bateman \& Roger A. Horn ..... 363
Primitive Polynomials (Mod 2) E. J. Watson ..... 368
Note on Latent Roots and Vectors of Segments of the Hilbert Matrix H. H. Denman \& R. C. W. Ettinger ..... 370
Expansions of Jacobian Elliptic Functions in Powers of the Modulus Y. K. Lin \& F. A. Lee ..... 372
Reviews and Descriptions of Tables and Books ..... 376Kennedy 29, Kortum \& McNiel 30, Salzer \& Richards 31, Forsythe\& Wasow 32, Jordan 33, Connor \& Young 34, Smirnov 35,Dekanosidze 36, Faddeyeva \& Terent'ey 37, Kireeva \& Karpov 38,Luk’anọv, Teplov \& Akimova 39, Sherry 40, Cerrillo \& Kautz41, Dwight 42, Hughes \& Dodge 43, Bois 44, Ledley 45, Brouwer\& Clemence 46, Zaidel', Prokof'ev \& Raiskit 47, Bark, Ganson \&Meister 48, Langer 49, Mittman \& Ungar 50, Charnes \& Cooper51, Diermer 52, Guest 53, Zurmühl 54
Table Errata. ..... 405
Allen 312, Dwight 313, Sterne 314
Corrigendum ..... 406
Greenberger
Published Quarterly for the National Academy of Sciences-National Research Council
By the

