

PROCEEDINGS
OF THE
AMERICAN MATHEMATICAL SOCIETY

EDITED BY

FRED G. BRAUER	ARTHUR MATTUCK
W. H. J. FUCHS	ERNEST A. MICHAEL
IRVING GLICKSBERG	IRVING REINER
P. EMERY THOMAS	

WITH THE COÖPERATION OF

W. W. BOONE	S. M. SHAH
JOSHUA CHOVER	HANS WEINBERGER

VOLUME 23, NUMBER 3
DECEMBER, 1969

PUBLISHED BY THE AMERICAN MATHEMATICAL SOCIETY
PROVIDENCE, RHODE ISLAND

Proceedings of the American Mathematical Society

The PROCEEDINGS of the American Mathematical Society is devoted entirely to research in pure and applied mathematics, and the publication of original papers of moderate length. Articles for insertion should be typewritten and double spaced. Ditto is not generally satisfactory, although other modes of multiple reproduction may be. The maximum length of an acceptable paper is about 8 printed pages. (Since a page of the PROCEEDINGS contains about 400 words, a rule of thumb is that under 10 typed pages is probably within the limit, but that over 12 typed pages is probably too long.) The *Manual for Authors*, available from the Society, should be consulted for symbols and style conventions. Authors should take the greatest possible care in preparing the original manuscript. Hand drawn symbols are satisfactory, if clearly done; directions to the printer should be included where necessary on a separate sheet, not in the accompanying letter. Authors must keep a complete copy of their manuscript, and editors will acknowledge receipt; manuscripts can therefore be sent by ordinary mail and any other kind (registered, certified) is entirely unnecessary.

The first page should consist of a *descriptive title*, followed by an *abstract* which summarizes the article in language suitable for workers in the general field (algebra, analysis, etc.). It should be at least one complete sentence, but not over 150 words, with the upper limit primarily for longer papers. The title should be short, but informative; useless or vague phrases such as "some remarks about" or "concerning" should be avoided. At the end of the article, placed before the first footnote, there should be first the A.M.S. *subject classification numbers* representing the primary and secondary subjects of the article, followed by a list of *key words* and *phrases* describing the subject matter of the article and taken from it. A list of subject classification numbers is printed at the end of each volume of Mathematical Reviews. See the June 1969 Notices for more details, as well as illustrative examples.

Very short notes (not to exceed 1 printed page) of an unusual nature are also accepted, and appear under the heading SHORTER NOTES. (Items deemed suitable include an elegant new proof of an important and well-known theorem, an illuminating example of counterexample, or a new viewpoint on familiar results. New results, if of a brief and striking character, might also be acceptable, though in general a paper which is merely very short will not be suitable for the SHORTER NOTES department.)

Papers in algebra and number theory should be sent to ARTHUR MATTUCK, Room 2-275, Mathematics Department, Massachusetts Institute of Technology, Cambridge, Massachusetts 02139, or to IRVING REINER, Mathematics Department, University of Illinois, Urbana, Illinois 61801.

Papers in modern or classical analysis should be sent to IRVING GLICKSBERG, Mathematics Department, University of Washington, Seattle, Washington 98105, or to W. H. J. FUCHS, White Hall, Cornell University, Ithaca, New York 14850.

Papers in algebraic geometry should be sent to ARTHUR MATTUCK; papers in set-theoretic and general topology to ERNEST MICHAEL, Mathematics Department, University of Washington, Seattle, Washington 98105; in algebraic topology and all other types of geometry to P. EMERY THOMAS, Mathematics Department, University of California, Berkeley, California 94720.

Papers in applied mathematics, differential equations, and related areas of analysis should be sent to FRED BRAUER, Mathematics Department, University of Wisconsin, Madison, Wisconsin 53706.

Papers in probability, statistics, and related fields should be sent to JOSHUA CHOVER, Mathematics Department, University of Wisconsin, Madison, Wisconsin 53706.

Papers in logic, set theory, and related areas should be sent to W. W. BOONE, Mathematics Department, University of Illinois, Urbana, Illinois 61801.

All other communications should be addressed to the Managing Editor, ARTHUR MATTUCK, at the above address.

Inquiries from authors regarding reprints, or changes of addresses for mailing proofs, should be sent directly to the Editorial Department, American Mathematical Society, P. O. Box 6248, Providence, Rhode Island 02904.

Four volumes of three issues are planned for 1969. The subscription price is \$80.00 for the four volumes. Back issues of Volumes 1-16 are available at a price of \$14.00 each and Volumes 17-21 at a price of \$18.00 each.

The PROCEEDINGS OF THE AMERICAN MATHEMATICAL SOCIETY is published monthly. Subscriptions, orders for back numbers, and inquiries in regard to nondelivery of current numbers should be addressed to the American Mathematical Society, 321 S. Main St., P. O. Box 6248, Providence, R. I. 02904. Second-class postage paid at Providence, Rhode Island and additional mailing offices.

Copyright ©, American Mathematical Society, 1969
Printed in the United States of America

INDEX TO VOLUME 23

* Starred items are "Shorter Notes"

- Al-Salam, W. A. and Verma, A. *Some orthogonality preserving operators*, 136.
- Anderson, B. A. and Stewart, D. G. *T_1 -complements of T_1 topologies*, 77.
- Au-Yeung, Yik-Hoi. *Some theorems on the real pencil and simultaneous diagonalization of two hermitian bilinear functions*, 246.
- Baisnab, A. P. *On a theorem of Goffman and Neugebauer*, 573.
- Banks, Dallas O. *Inequalities for the eigenvalues of powers of functions*, 356.
- *Bednarek, A. R. and Whaley, T. P. *Binary relations on sets of regular cardinality*, 455.
- Bennett, H. R. See Lutzer, D. J.
- *Berberian, S. K. *Trace and the convex hull of the spectrum in a von Neumann algebra finite class*, 211.
- Bobisud, L. E. *Oscillation of nonlinear second-order equations*, 501.
- Bogar, G. A. *Properties of two point boundary value functions*, 335.
- Borrego, J. T. *Point-transitive actions by a standard metric thread*, 261.
- Bosch, W. See Krajewicz, P.
- Boyd, David W. *Transcendental numbers with badly distributed powers*, 424.
- Brasher, Russell G. *A separation theorem for manifolds*, 242.
- , *The homology sequence of the double covering; Betti numbers and duality*, 714.
- Bredon, Glen E. *The set on nonprincipal orbits of an action on E^n* , 254.
- Brown, James Ward. *On the Sheffer A-type of certain modified polynomial sets*, 718.
- Brunk, H. D. *Correction to: On an extension of the concept conditional expectation*, 727.
- Bryant, J. L. *On embeddings of compacta in euclidean space*, 46.
- Burke, Dennis K. *On subparacompact spaces*, 625.
- Burns, R. G. *A note on free groups*, 14.
- Cain, George L., Jr. *Compactification of mappings*, 298.
- Caradus, S. R. *Universal operators and invariant subspaces*, 526.
- Chang, K. W. *Remarks on certain hypothesis in singular perturbations*, 41.
- Chernoff, Paul R. *Elements of a normed algebra whose 2^n th powers lie close to the identity*, 386.
- Choe, Tae Ho. *The breadth and dimension of a topological lattice*, 82.
- Chou, Ching. *On the size of the set of left invariant means on a semigroup*, 199.
- Closs, M. P. *Homogeneous almost tangent structures*, 237.
- Cobb, John. *On ordering infinitely many small homeomorphisms*, 64.
- Cook, Thurlow A. *Weakly equicontinuous Schauder bases*, 536.
- Coven, Ethan M. *Compactness of limit sets and semiorbit closures*, 120.
- Coven, Ethan M. and Reddy, William L. *Limit set equivalences of replete semigroups*, 625.
- Cullen, Michael R. *Meromorphic functions which cluster on the boundary*, 588.
- Cutler, William H. *Negligible subsets of infinite-dimensional Fréchet manifolds*, 668.
- Darst, R. B. *Properties of vector valued finitely additive set functions*, 528.
- Daverman, Robert J. *A new proof for the Hosay-Lininger theorem about crumpled cubes*, 52.

- DeMarr, R. E. *Convergence of a sequence of powers*, 401.
- Dickey, R. W. *Infinite systems of nonlinear oscillation equations related to the string*, 459.
- Dietrich, William E., Jr. *A note on the ideal structure of $C(X)$* , 174.
- Dollinger, Michael B. *Nuclear topologies consistent with a duality*, 565.
- Eifler, Larry. *The slice product of function algebras*, 559.
- Eisenberg, Murray. *Embedding a transformation group in an automorphism group*, 276.
- Eldridge, Klaus E. *On ring structures determined by groups*, 472.
- Fabian, R. J. and Kent, C. F. *Recursive functions defined by ordinal recursions*, 206.
- Fein, Burton. *Extensions of group representations over fields of prime characteristic*, 11.
- Ferguson, Edward N. *Commutative rims in clans with zero*, 304.
- Gellar, Ralph. *Operators commuting with a weighted shift*, 538.
- Gentile, Enso R. *A note on injective group rings*, 431.
- Gilbert, Richard C. *Symmetric operators with twice continuously differentiable spectral functions*, 347.
- Glaser, L. C. *Monotone noncompact mappings of E^r onto E^k for $r \geq 4$ and $k \geq 3$* , 282.
- Goldstein, Jerome A. *An asymptotic property of solutions of wave equations*, 359.
- Gollwitzer, H. E. *A note on a functional inequality*, 642.
- Goodwyn, L. Wayne. *Topological entropy bounds measure-theoretic entropy*, 679.
- Graham, Colin C. *Symbolic calculus for algebras of Fourier-Stieltjes transforms*, 311.
- Gray, William J. and Roberson, Fred A. *On the near equicontinuity of transformation groups*, 59.
- Greenfield, Stephen J. *Upper bounds on the dimension of extendibility of submanifolds in C^n* , 185.
- Hagopian, C. L. *Mutual aposynthesis*, 615.
- Halpern, Benjamin. *The kernel of a starshaped subset of the plane*, 692.
- Heil, Wolfgang. *On the existence of incompressible surfaces in certain 3-manifolds*, 704.
- Heinzer, Martin N. *Higher derivations of wildly ramified v -rings*, 94.
- Helton, Burrell W. *A product integral representation for a Gronwall inequality*, 493.
- Herod, J. V. *A Gronwall inequality for linear Stieltjes integrals*, 34.
- Heyde, C. C. *A note concerning behaviour of iterated logarithm type*, 85.
- Hildebrandt, John A. *The universal compact subunithetic semigroup*, 220.
- Hill, Paul. *A summable C_α -group*, 428.
- Himelberg, C. J., Porter, J. R. and van Vleck, F. S. *Fixed point theorems for condensing multifunctions*, 635.
- Hirschfelder, John J. *On Wu's form of the first main theorem of value distribution*, 548.
- Hoffman, A. J. *On the covering of polyhedra by polyhedra*, 123.
- Holub, J. R. *Some problems concerning bases in Banach spaces*, 521.
- Hooper, R. C. *Many topological abelian groups have dense divisible subgroups*, 555.
- Horowitz, S. *Strong ergodic theorems for Markov processes*, 328.
- Hudson, Sigmund N. *On connectivity properties of finite-dimensional groups*, 68.
- Husch, L. S. *Unknotting in codimension one*, 215.
- Jobe, John. *The intersection of indecomposable continua*, 623.
- Johnson, Gerald W. *Integral representation of multiplicative, involution preserving operators in $\mathcal{L}(C(S), E)$* , 373.
- Jones, J. P. *Independent recursive axiomatizability in arithmetic*, 107.
- Kaczynski, T. J. *The set of curvilinear convergence of a continuous function defined in the interior of a cube*, 323.
- Kagiwada, H. H., Kalaba, R. E. and Schumitzky, A. *A representation for the solution of Fredholm integral equations*, 37.

- Kalaba, R. E. See Kagiwada, H. H.
- Kallman, Robert T. *The strong-bounded topology on groups of automorphisms of a von Neumann algebra*, 367.
- Karrass, A. and Solitar, D. *On groups with one defining relation having an abelian normal subgroup*, 5.
- Kellogg, C. N. *Pseudo-uniform convexity in H^1* , 190.
- Kent, C. F. See Fabian, R. J.
- Kim, W. J. *On a theorem of Pokornyi*, 343.
- Krajewicz, P. and Bosch, W. *Polyanalytic functions with equal modulus*, 127.
- Kraut, Edgar A. *On equations of the Wiener-Hopf type in several complex variables*, 24.
- Kruskal, J. B. *Two convex counterexamples: A discontinuous envelope function and a nondifferentiable nearest-point mapping*, 697.
- *Kwun, Kyung Whan. *Nonexistence of orientation reversing involutions on some manifolds*, 725.
- Lacey, H. Elton and Morris, Peter D. *On spaces of type $A(K)$ and their duals*, 151.
- Lam, T. Y. and Reiner, I. *Finite generation of Grothendieck rings relative to cyclic subgroups*, 481.
- Lambert, H. W. *Replacing certain maps of 3-manifolds by homeomorphisms*, 676.
- Leech, Robert B. *On the characterization of $\mathcal{H}(B)$ spaces*, 518.
- Leviatan, Dany and Lorch, Lee. *A characterization of totally regular $[J, f(x)]$ transforms*, 315.
- Lipschutz, Seymour. *On the conjugacy problem and Greendlinger's eighth-groups*, 101.
- Liu, C. T. *An equivalent condition for the existence of a measurable cardinal*, 605.
- Lorch, Lee. See Leviatan, Dany.
- Loveland, L. D. *Tameness implied by extending a homeomorphism to a point*, 287.
- Lutzer, D. J. and Bennett, H. R. *Separability, the countable chain condition and the Lindelöf property in linearly orderable spaces*, 664.
- McCrimmon, Kevin. *A note on finite division rings*, 598.
- McLaughlin, J. R. *Rademacher series with nondifferentiable sums*, 140.
- McMillan, J. E. *Cluster sets of meromorphic functions*, 148.
- Martin, R. H., Jr. *A bound for solutions of Volterra-Stieltjes integral equations*, 506.
- Manougian, Manoug N. *On the convergence of a sequence of Perron integrals*, 320.
- Mason, A. W. *On a theorem by Leon Greenberg*, 18.
- May, J. Peter. *Some remarks on the structure of Hopf algebras*, 708.
- Menon, K. V. *On the convolution of logarithmically concave sequences*, 439.
- Morris, Peter D. See Lacey, H. Elton.
- *Morrow, James A. *The tangent bundle of the long line*, 458.
- Muckenhoupt, Benjamin. *Mean convergence of Jacobi series*, 306.
- Nichols, J. C. *Equivalent metrics giving different values to metric-dependent dimension functions*, 648.
- Noble, N. *A note on z -closed projections*, 73.
- Noll, Walter. *Quasi-invertibility in a staircase diagram*, 1.
- Park, Chull. *A generalized Paley-Wiener-Zygmund integral and its applications*, 388.
- Parthasarthy, T. *Product solutions for simple games. III*, 412.
- Peterson, A. C. *A theorem of Aliev*, 364.
- Porter, J. R. See Himmelberg, C. J.
- Putz, H. *Transverse field implies normal microbundle*, 232.
- Randolph, J. W. *Finite groups with solvable maximal subgroups*, 490.
- Reddy, William L. See Coven, Ethan M.

- Reiner, I. See Lam, T. Y.
- Restrepo, Guillermo. *An infinite dimensional version of a theorem of Bernstein*, 193.
- Rigelhof, Roger. *Subalgebras of group algebras*, 404.
- Roberson, Fred. See Gray, William J.
- Rosen, Ronald H. *Concerning suspension spheres*, 225.
- Roth, Emile Boyd. *Quasi-reflexivity and dual norms*, 164.
- *Rushing, T. B. *Realizing homeomorphisms by ambient isotopies*, 723.
- *Russo, Bernard. *Isometries of the trace class*, 213.
- Sandomierski, F. L. *A note on the global dimension of subrings*, 478.
- Schaeffer, David G. *A note on the representation of a solution of an elliptic differential equation near an isolated singularity*, 450.
- Schumitzky, A. See Kagiwada, H. H.
- Schupp, Paul E. *On the substitution problem for free groups*, 421.
- Sehgal, V. M. *A fixed point theorem for mappings with a contractive iterate*, 631.
- Seidenberg, A. *Abstract differential algebra and the analytic case*. II, 689.
- Simon, Hermann. *Extensions of torsionfree groups by torsion groups*, 433.
- Sine, Robert. *A note on rays at the identity operator*, 546.
- Smithson, Raymond E. *A note on δ -continuity and proximate fixed points for multi-valued functions*, 256.
- Solitar, D. See Karrass, A.
- Srivastava, H. M. *Generating functions for Jacobi and Laguerre polynomials*, 590.
- Stephenson, R. M., Jr. *Noncut and modified compactness conditions*, 266.
- Stewart, D. G. See Anderson, B. A.
- Stoltenberg, R. A. *A note on stratifiable spaces*, 294.
- Strait, Peggy Tang. *On Berman's version of the Lévy-Baxter theorem*, 91.
- Sundaresan, K. *Extreme points of the unit cell in Lebesgue-Bochner function spaces*. I, 179.
- Swetits, John. *Summability of a Cauchy product series*, 144.
- Tam, K. W. *On measures with separable orbit*, 409.
- Tillman, Stephen J. *The multiplicative group of absolutely algebraic fields in characteristic p* , 601.
- Uhl, J. J., Jr. *The range of a vector-valued measure*, 158.
- van Vleck, F. S. See Himmelberg, C. J.
- Verma, A. See Al-Salam, W. A.
- Vidossich, Giovanni. *A note on cardinal reflections in the category of uniform spaces*, 55.
- Vuckovic, V. D. *Almost recursive sets*, 114.
- Walkup, David W. and Wets, Roger J.-B. *A Lipschitzian characterization of convex polyhedra*, 167.
- Wang, S. P. *On a conjecture of Chabauty*, 569.
- . *On a theorem of representation of lattices*, 583.
- Warner, Kenneth K. *A note on a theorem of Weyl*, 469.
- Wend, David V. V. *Existence and uniqueness of solutions of ordinary differential equations*, 27.
- Wets, Roger J.-B. See Walkup, David W.
- *Whaley, T. P. See Bednarek, A. R.
- Wiegand, Roger. *Endomorphism rings of ideals in a commutative regular ring*, 442.
- Wilken, Donald R. *Remarks on the string of beads*, 133.
- Williams, G. K. *On continuity in two variables*, 580.
- Williams, R. E. *On the free product of rings with weak algorithm*, 596.

- Wiscamb, Margaret Reames. *The discrete countable chain condition*, 608.
- Wu, T. S. *A certain of type locally compact totally disconnected topological groups*, 613.
- Yamashita, Shinji. *A remark on Neuwirth and Newman's paper: "Positive $H^{1/2}$ functions are constants,"* 147.
- Yeh, J. *Approximate evaluation of a class of Wiener integrals*, 513.
- Young, Sam W. *The representation of chainable continua with only two bonding maps*, 653.
- Zaidman, S. *Bounded solutions of some abstract differential equations*, 340.
- Zenor, Phillip. *A note on Z-mapping and WZ-mappings*, 273.
- Zippon, M. *On some subspaces of Banach spaces whose duals are L_1 spaces*, 378.

STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION

Act of October 23, 1962; Section 4369, Title 39, Unites States Code

1. Date of Filing: September 1, 1969.
2. Title of Publication: Proceedings of the American Mathematical Society.
3. Frequency of Issue: Monthly.
4. Location of Known Office of Publication: 321 South Main Street, P.O. Box 6248, Providence, Rhode Island 02904
5. Location of the Headquarters of General Business Offices of the Publishers: Same
6. Names and Addresses of Publisher, Editor, and Managing Editor: Publisher, American Mathematical Society, 321 South Main Street, P.O. Box 6248, Providence, Rhode Island 02904; Editor, Arthur Mattuck, Room 2-241, Massachusetts Institute of Technology, Cambridge, Massachusetts 02139; Managing Editor, None.
7. Owner: American Mathematical Society, P.O. Box 6248, 321 South Main Street, Providence, Rhode Island 02904.
8. Known Bondholders, Mortgages and Other Security Holders Owning or Holding 1 Percent or More of Total Amount of Bonds, Mortgages or Other Securities: None.
9. The purpose, function, and nonprofit status of this organization and the exempt status for Federal income tax purposes have not changed during the preceding 12 months.
10. Extent and Nature of Circulation:

	Average No. Copies Each Issue During Preceding 12 Months	Actual No. Copies of Single Issue Published Nearest to Filing Date
A. Total No. Copies Printed.....	4260	3400
B. Paid Circulation		
1. Sales through dealers and carriers, street venders and counter sales.....	740	884
2. Mail Subscriptions.....	2200	1713
C. Total Paid Circulation.....	2940	2597
D. Free Distribution.....	15	22
E. Total Distribution.....	2955	2619
F. Office Use, Left-over, Unaccounted, Spoiled After Printing.....	1305	781
G. Total.....	4260	3400

I certify that the statements made by me above are correct and complete.—Gordon L. Walker

Contents—Continued from back cover

A certain type of locally compact totally disconnected topological groups. By T. S. WU.....	613
Mutual aposyndesis. By C. L. HAGOPIAN.....	615
The intersection of indecomposable continua. By JOHN JOBE.....	623
Limit set equivalences of replete semigroups. By ETHAN M. COVEN AND WILLIAM L. REDDY.....	625
A fixed point theorem for mappings with a contractive iterate. By V. M. SEHGAL.....	631
Fixed point theorems for condensing multifunctions. By C. J. HIMMELBERG, J. R. PORTER AND F. S. VAN VLECK.....	635
A note on a functional inequality. By H. E. GOLLWITZER.....	642
Equivalent metrics giving different values to metric-dependent dimension functions. By J. C. NICHOLS.....	648
The representation of chainable continua with only two bonding maps. By SAM W. YOUNG.....	653
On subparacompact spaces. By DENNIS K. BURKE.....	655
Separability, the countable chain condition and the Lindelöf property in linearly orderable spaces. By D. J. LUTZER AND H. R. BENNETT....	664
Negligible subsets of infinite-dimensional Fréchet manifolds. By WILLIAM H. CUTLER.....	668
Replacing certain maps of 3-manifolds by homeomorphisms. By H. W. LAMBERT.....	676
Topological entropy bounds measure-theoretic entropy. By L. WAYNE GOODWYN.....	679
Abstract differential algebra and the analytic case. II. By A. SEIDENBERG.....	689
The kernel of a starshaped subset of the plane. By BENJAMIN HALPERN.....	692
Two convex counterexamples: A discontinuous envelope function and a nondifferentiable nearest-point mapping. By J. B. KRUSKAL.....	697
On the existence of incompressible surfaces in certain 3-manifolds. By WOLFGANG HEIL.....	704
Some remarks on the structure of Hopf algebras. By J. PETER MAY....	708
The homology sequence of the double covering; Betti numbers and duality. By RUSSELL G. BRASHER.....	714
On the Sheffer A -type of certain modified polynomial sets. By JAMES WARD BROWN.....	718

SHORTER NOTES

Realizing homeomorphisms by ambient isotopies. By T. B. RUSHING.....	723
Nonexistence of orientation reversing involutions on some manifolds. By KYUNG WHAN KWUN.....	725
Erratum to Volume 14.....	727
Index to Volume 23.....	728
Statement of ownership, management and circulation.....	733

CONTENTS

Vol. 23, No. 3

DECEMBER, 1969

Whole No. 126

	Page
Infinite systems of nonlinear oscillation equations related to the string. By R. W. DICKEY.....	459
A note on a theorem of Weyl. By KENNETH K. WARNER.....	469
On ring structures determined by groups. By KLAUS E. ELDRIDGE...	472
A note on the global dimension of subrings. By F. L. SANDOMIERSKI.	478
Finite generation of Grothendieck rings relative to cyclic subgroups. By T. Y. LAM AND I. REINER.....	481
Finite groups with solvable maximal subgroups. By J. W. RANDOLPH..	490
A product integral representation for a Gronwall inequality. By BURRELL W. HELTON.....	493
Oscillation of nonlinear second-order equations. By L. E. BOBISUD...	501
A bound for solutions of Volterra-Stieltjes integral equations. By R. H. MARTIN, JR.....	506
Approximate evaluation of a class of Wiener integrals. By J. YEH...	513
On the characterization of $\mathcal{H}(B)$ spaces. By ROBERT B. LEECH.....	518
Some problems concerning bases in Banach spaces. By J. R. HOLUB....	521
Universal operators and invariant subspaces. By S. R. CARADUS.....	526
Properties of vector valued finitely additive set functions. By R. B. DARST.....	528
Weakly equicontinuous Schauder bases. By THURLOW A. COOK.....	536
Operators commuting with a weighted shift. By RALPH GELLAR.....	538
A note on rays at the identity operator. By ROBERT SINE.....	546
On Wu's form of the first main theorem of value distribution. By JOHN J. HIRSCHFELDER.....	548
Many topological abelian groups have dense divisible subgroups. By R. C. HOOPER.....	555
The slice product of function algebras. By LARRY EIFLER.....	559
Nuclear topologies consistent with a duality. By MICHAEL B. DOLLINGER.....	565
On a conjecture of Chabauty. By S. P. WANG.....	569
On a theorem of Goffman and Neugebauer. By A. P. BAISNAB.....	573
On continuity in two variables. By G. K. WILLIAMS.....	580
On a theorem of representation of lattices. By S. P. WANG.....	583
Meromorphic functions which cluster on the boundary. By MICHAEL R. CULLEN.....	588
Generating functions for Jacobi and Laguerre polynomials. By H. M. SRIVASTAVA.....	590
On the free product of rings with weak algorithm. By R. E. WILLIAMS..	596
A note on finite division rings. By KEVIN MCCRIMMON.....	598
The multiplicative group of absolutely algebraic fields in characteristic p . By STEPHEN J. TILLMAN.....	601
An equivalent condition for the existence of a measurable cardinal. By C. T. LIU.....	605
The discrete countable chain condition. By MARGARET REAMES WISCAMB.....	608

Continued on inside back cover