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Heinz LÜNEBURG. — **Vorlesungen über Zahlentheorie.** Elemente der Mathematik vom höheren Standpunkt aus, Band 8. — Un vol. broché, 14,5 × 23, de 107 p. — Prix: Fr. 28.00. — Birkhäuser Verlag, Basel/Stuttgart, 1978.

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critically and minimally k -vertex (arc) strongly connected digraphs. — *C. C. Chen, A. J. W. Hilton*: A 4-colour conjecture for planar graphs. — *F. R. K. Chung, R. L. Graham, N. Pippenger*: On graphs which contain all small trees, II. — *W. Deuber, B. Rothschild*: Categories without the Ramsey property. — *M. Deza, P. Erdős, P. Frankl*: Intersection properties of systems of finite sets. — *W. Dörfler*: A complete lattice in graph theory. — *D. Duffus, I. Rival*: Crowns in dismantlable partially ordered sets. — *C. S. Edwards*: Complete subgraphs with largest sum of vertex degrees. — *R. J. Faudree, R. H. Schelp*: Connected Ramsey numbers for paths and stars. — *M. Fiedler*: Aggregation in graphs. — *S. Földes, P. L. Hammer*: On a class of matroid-producing graphs. — *A. Frank, A. Gyarfás*: How to orient the edges of a graph? — *P. Frankl*: The Erdős-Ko-Rado theorem is true for $n = ckt$. — *M. R. Garey, R. L. Graham, D. S. Johnson*: On a number-theoretic bin packing conjecture. — *A. Germa*: Decomposition of the edges of a complete t -uniform directed hypergraph. — *R. Giles*: Facets and other faces of branching polyhedra. — *M. C. Golumbic*: Threshold graphs and synchronizing parallel processes. — *I. Gutman*: Partial ordering of forests according to their characteristic polynomials. — *R. K. Guy*: Partizan and impartial combinatorial games. — *A. Gyarfás, J. Lehel*: Packing trees of different order into K_n . — *B. Gyires*: On permanent inequalities. — *E. Györi*: On division of graphs to connected subgraphs. — *R. Häggkvist*: A solution of the Evans conjecture for latin squares of large size. — *M. Hall, Jr.*: Matrices satisfying the incidence equation. — *H. Harborth*: Crossings on edges in drawings of complete multipartite graphs. — *B. Harris*: On a theorem of Volosin concerning enumeration of function compositions. — *M.-C. Heydemann, D. Sotteau*: Line-graphs of hypergraphs II. — *C. Hoede*: On characterization of Hamiltonian graphs. — *A. J. Hoffman, D. E. Schwartz*: On a lattice polyhedra. — *S. G. Hoggar*: Equiangular lines.

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Schaar : On 3-Hamiltonian cubes of connected graphs. — *A. Schrijver* : The linking of matroids by linking systems. — *J. J. Seidel* : Eutactic stars. — *M. Sekanina* : Hamiltonian lines in powers of infinite graphs. — *M. Simonovits, V. T. Sos* : Intersection theorems for graphs II. — *Z. Skupien* : Finding all maximal path factors of a tree and related problems. — *N. J. A. Sloane* : New bounds for error-correcting codes and packing numbers (summary). — *F. Sterboul* : A problem in constructive combinatorics and related questions. — *L. Suranyi* : A note on a conjecture of Gallai concerning α -critical graphs. — *W. T. Tutte* : Chromatic sums. — *B. Uhrin* : On two combinatorial identities useful in linear inequalities. — *K. S. Vijayan* : On arc-transitive graphs. — *H.-J. Voss* : Maximal circuits and paths in graphs. Extreme cases. — *W. Wessel* : A second family of edge-critical wheels. — *R. J. Wilson* : Graph theory and chemistry. — *A. P. Wojda* : Strongly (p, q) -Hamiltonian graphs. (Some results). — *B. Zelinka* : Dot-compositions of graphs.

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Selected papers on precalculus. — Reprinted from the "American mathematical monthly" and from the "Mathematics Magazine", selected and arranged by Tom M. Apostol, Gulbank D. Chakerian, Geraldine C. Darden, John D. Neff. — The Raymond W. Brink selected mathematical papers, vol. 1. — Un vol. relié, 18,5 × 26 de xvii, 467 p. — Prix: £9.15. — The Mathematical Association of America (distr. by John Wiley & Sons Ltd., New York/Toronto/London/Sydney) 1978.

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R. M. Winger, T. Fort, W. L. G. Williams, R. M. Winger. — INDUCTION, IDENTITIES, AND INEQUALITIES: *Induction*: 8 articles par: J. W. A. Young, E. T. Bell, W. A. Hurwitz, R. G. Albert, R. C. Buck, V. L. Klee, Jr., L. Moser, D. S. Greenstein. *Identities*: 3 articles par: R. C. Mullin, D. Allison, R. G. Stein. *Inequalities*: 3 articles par: D. J. Newman, B. Åkerberg, L. H. Lange. — TRIGONOMETRY AND TRIGONOMETRIC FUNCTIONS: 21 articles par: R. D. Carmichael, J. V. Uspensky, R. Woods, W. Dancer, E. J. McShane, A. S. Householder, H. L. Dorwart, R. W. Wagner, F. E. Wood, L. J. Burton, T. S. Chu, E. L. Eagle, A. K. Bettinger, C. M. Fulton, M. Golomb, D. Pedoe, F. H. Young, H. V. Craig (ed.), N. Schaumberger, A. R. Amir-Moéz, R. B. Kershner. — ELEMENTARY ALGEBRA: *Polynomials*: 3 articles par: J. Westlund, L. S. Dederick, L. Brickman & L. Steinberg. *Vector algebra*: 5 articles par: C. J. Coe & G. Y. Rainich, S. Bourne, M. K. Fort, Jr., D. T. Dwyer, M. S. Klamkin. *Constructions with straightedge and compass*: 2 articles par: L. E. Dickson & N. D. Kazarinoff. *Miscellaneous*: 6 articles par: L. J. Paradiso, R. A. Garver, L. S. Johnston, R. A. Rosenbaum, S. W. Golomb, J. E. Nymann. — SOLUTIONS OF EQUATIONS: 13 articles par: G. R. Dean, E. J. Oglesby, J. P. Ballantine, E. C. Kennedy, G. Henriquez, H. M. Gehman, L. R. Ford, A. A. Albert, C. Adler, D. E. Whitford & M. S. Klamkin, M. J. Hellman. — SYNTHETIC GEOMETRY: *Triangles*: 8 articles par: F. Cajori, O. Dunkel, J. O. Engelhardt, G. Polya, W. E. Bleick, G. Gilbert & D. MacDonnell, D. Pedoe, R. J. Webster. *Other configurations*: 9 articles par: F. V. Morley, H. C. Bradley, N. A. Court, M. S. Knebelman, R. B. Kirchner, N. D. Kazarinoff & R. Weitzenkamp, S. Kravitz, M. Goldberg, F. Abeles. *Miscellaneous*: 5 articles par: H. T. Scudder, C. R. Wylie, Jr., D. A. Moran, J. L. Ercolano, R. Isaacs. — CONIC SECTIONS: *Equations*: 10 articles par: W. W. Landis, A. C. Lunn, E. S. Allen, H. B. Thornton, D. C. Duncan, L. S. Johnston, A. E. Johns, M. T. Bird, F. Hawthorne, N. Anning. *Classification and construction*: 7 articles par: L. S. Johnston, R. C. Yates, F. H. Young, G. B. Huff, M. Pascual, J. B. Easton, *Tangents*: 4 articles par: W. D. Lambert, F. H. Young, F. H. Young & L. Erickson, W. R. Ransom. *Applications*: 3 articles par: T. M. Putnam, R. T. Coffman & C. S. Ogilvy, R. Coffman. — ANALYTIC GEOMETRY: *Lines and planes*: 10 articles par: G. W. Greenwood, K. May, C. S. Scott, J. P. Ballantine & A. R. Jerbert, R. R. Stoll, S. Leader, W. R. Ransom, T. E. Mott, R. L. Eisenman. *Curves and surfaces*: 8 articles par: J. P. Wilson, A. Kempner, G. M. Juredini, L. S. Johnston, P. C. Hammer, R. W. Wagner, F. Max Steen, M. S. Klamkin. — AREA AND VOLUME: 11 articles par: H. L. Coar, R. P. Baker, L. E. Dickson, W. R. Longley, K. P. Williams, J. L. Coolidge, J. W. Cell, V. Thébault, M. K. Fort, Jr., S. H. Gould, C. H. Raifaizen. — AUTHOR INDEX.

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unique factorization domains : 7 articles par: W. Rudin, T.-S. Rhai, P. J. Arpaia, R. Singer, J. C. Wilson, P. Samuel, P. M. Cohn. *Commutative rings* : 4 articles par: W. R. Scott, I. Reiner, R. W. Gilmer. *Modules* : 3 articles par: W. J. Wong, W. G. Leavitt, R. E. Peinado. *Division algebras* : 5 articles par: R. S. Palais, R. von Randow, I. Niven, I. N. Herstein, T. J. Kaczynski. *Non-commutative rings* : 10 articles par: L. M. Weiner, A. A. Sagle, N. H. McCoy, D. B. Erickson, C. W. Bitzer, P. Hill, A. Kertész & O. Steinfeld, Y. Utumi, P. M. Cohn, I. Fischer & R. R. Struik. *Non-associative rings and algebras* : 3 articles par: H. Zassenhaus, C. E. Tsai, J. Goldman & Seymour Kass. — FIELD THEORY AND ALGEBRAIC NUMBER THEORY: *Field theory and Galois theory* : 5 articles par: H. Zassenhaus, R. Gilmer, J. Lipman, R. L. Roth, R. L. Borger. *Finite fields* : 3 articles par: S. MacLane, R. C. Mullin, G. J. Simmons. *Reducibility of polynomials* : 2 articles par: A. A. Albert, H. Skala. *Valuation theory* : 2 articles par: C. C. MacDuffee, P. Monsky. *Algebraic number theory* : 5 articles par: R. MacKenzie & J. Scheuneman, A. Hausner, I. Gerst & J. Brillhart, B. F. Wyman, L. J. Goldstein. — LINEAR ALGEBRA: *Equations, determinants, and related topics* : 9 articles par: G. A. Miller, H. T. Burgess, O. Taussky, D. E. Whitford & M. S. Klamkin, S. M. Robinson, H. Flanders, D. W. Robinson, S. Cater, H. Liebeck. *Characteristic polynomials and eigenvalues* : 5 articles par: W. M. Scott, W. V. Parker, J. Schmid, R. Bellman, I. M. Scheffer. *Inner products and quadratic forms* : 6 articles par: L. Mirsky, H. Schneider, A. M. Gleason, S. M. Samuels, B. Walsh, A. M. Adelberg. *Canonical forms* : H. K. Farahat & L. Mirsky, M. Epstein & H. Flanders, L. Mirsky. *Linear algebra over finite fields* : 2 articles par: D. W. Crowe, S. D. Fisher & M. N. Alexander. *Applications* : 7 articles par: J. L. Brenner, W. V. Parker, W. Swartz, J. Levine, S. W. Golomb & L. D. Baumert, E. R. Berlekamp & E. N. Gilbert & F. W. Sinden, F. D. Parker. *Other topics* : 3 articles par: H. Flanders, M. Marcus, O. Taussky. — HISTORY: 3 articles par: W. C. Eells, J. D. Swift, G. Birkhoff. — ADDITIONAL TOPICS: 2 articles par: O. Taussky, I. Niven. (Bibliographic entries à la fin de chaque chapitre.) — AUTHOR INDEX.

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transform. The p -adic Leopoldt transform. — *Iwasawa theory and ideal class groups*: The Iwasawa algebra. Weierstrass preparation theorem. Modules over $Z_p[[X]]$. Z_p -extensions and ideal class groups. The maximal p -abelian p -ramified extension. The Galois group as module over the Iwasawa algebra. — *Kummer theory over cyclotomic Z_p -extensions*: The cyclotomic Z_p -extension. The maximal p -abelian p -ramified extension of the cyclotomic Z_p -extension. Cyclotomic units as a universal distribution. The Leopoldt-Iwasawa theorem and the Vandiver conjecture. — *Iwasawa theory of local units*: The Kummer-Takagi exponents. Projective limit of the unit groups. A basis for $U(\chi)$ over Λ . The Coates-Wiles homomorphism. The closure of the cyclotomic units. — *Lubin-Tate theory*: Lubin-Tate groups. Formal p -adic multiplication. Changing the prime. The reciprocity law. The Kummer pairing. The logarithm. Application of the logarithm to the local symbol. — *Explicit reciprocity laws*: Statement of the reciprocity laws. The logarithmic derivative. A local pairing with the logarithmic derivative. The main lemma for highly divisible x and $\alpha = \chi_n$. The main theorem for the symbol $\langle \chi, \chi_n \rangle_n$. The main theorem for divisible χ and $\alpha = \text{unit}$. End of the proof of the main theorems.

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Introduction: General remarks. The Robbins-Monro process. A “continuous” process version of section 2. Regulation of a dynamical system; a simple example. Function minimization: the Kiefer-Wolfowitz procedure. Constrained problems. An economics example. — *Convergence w.p.l. for unconstrained systems*: Preliminaries and motivation. The Robbins-Monro and Kiefer-Wolfowitz algorithms: conditions and discussion. Convergence proofs for RM and KW-like procedures. A general Robbins-Monro process: “exogenous noise”. A general RM process; state dependent noise. Some applications. Mensov-Rademacher estimates. — *Weak convergence of probability measures*. — *Weak convergence for unconstrained systems*: Conditions and general discussion. The Robbins-Monro and Kiefer-Wolfowitz procedures. A general Robbins-Monro process: exogenous noise. A general RM process: state dependent noise. The identification problem. A counter-example to tightness. Boundedness of $\{X_n\}$ and tightness of $\{X^n(\cdot)\}$. — *Convergence w.p.l. for constrained systems*: A penalty-multiplier algorithm for equality constraints. A Lagrangian method for inequality constraints. A projective algorithm. A penalty-multiplier method for inequality constraints. — *Weak convergence : constrained systems*: A multiplier type algorithm for equality constraints. The Lagrangian method. A projection algorithm. A penalty-multiplier algorithm for inequality constraints. — *Rates of convergence*: The problem formulation. Conditions and discussions. Rates of convergence for case 1, the KW algorithm. Discussion of rates of convergence for two KW algorithms.

P. R. HALMOS, V. S. SUNDER. — **Bounded integral operators on L^2 spaces**. — Ergebnisse der Mathematik und ihrer Grenzgebiete, Band 96. — Un vol. relié, 17 × 25, de xv, 132 p. — Prix: DM 33.00. — Springer Verlag, Berlin/Heidelberg/New York, 1978.

Preface. — Conventions. — Prerequisites. — Measure spaces. — Kernels. — Domains. — Boundedness. — Examples. — Isomorphisms. — Algebra. — Uniqueness. — Tensors. — Absolute boundedness. — Carleman kernels. — Compactness. — $\langle 2,1 \rangle$ compactness. — Essential spectrum. — Characterization. — Universality. — Recognition. —

Appendix A : Finiteness and countability conditions. — *Appendix B* : Pointwise unbounded bounded kernels. — *Appendix C* : Riemann-Lebesgue lemma.

Lynn Arthur STEEN, J. Arthur SEEBACH, Jr. — **Counterexamples in topology**. — Second edition. — Un vol. broché, 15,5 × 23,5 de xi, 244 p. — Prix: DM 26.00. — Springer Verlag, New York/Heidelberg/Berlin, 1978.

Basic definitions : General introduction. Separation axioms. Compactness. Connectedness. Metric spaces. — *Counterexamples* : Finite discrete topology. Countable discrete topology. Uncountable discrete topology. Indiscrete topology. Partition topology. Odd-even topology. Deleted integer topology. Finite particular point topology. Countable particular point topology. Uncountable particular point topology. Sierpinski space. Closed extension topology. Finite excluded point topology. Countable excluded point topology. Uncountable excluded point topology. Open extension topology. Either-or topology. Finite complement topology on a countable space ... on an uncountable space. Countable complement topology. Double pointed countable complement topology. Compact complement topology. Countable Fort space. Uncountable Fort space. Fortissimo space. Arens-Fort space. Modified Fort space. Euclidean topology. The Cantor set. The rational numbers. The irrational numbers. Special subsets of the real line. Special subsets of the plane. One point compactification topology. One point compactification of the rationals. Hilbert space. Fréchet space. Hilbert cube. Order topology. Open ordinal space $[0, \Gamma]$ ($\Gamma < \Omega$). Open ordinal space $[0, \Omega)$. Closed ordinal space $(0, \Omega)$. Uncountable discrete ordinal space. The long line. The extended long line. An altered long line. Lexicographic ordering on the unit square. Right order topology. Right order topology on R . Right half-open interval topology. Nested interval topology. Overlapping interval topology. Interlocking interval topology. Hjalmar Ekdal topology. Prime ideal topology. Divisor topology. Evenly spaced integer topology. The p -adic topology on Z . Relatively prime integer topology. Prime integer topology. Double pointed reals. Countable complement extension topology. Smirnov's deleted sequence topology. Rational sequence topology. Indiscrete rational extension of R . Indiscrete irrational extension of R . Pointed rational extension of R . Pointed irrational extension of R . Discrete rational extension of R . Discrete irrational extension of R . Rational extension in the plane. Telophase topology. Double origin topology. Irrational slope topology. Deleted diameter topology. Deleted radius topology. Half-disc topology. Irregular lattice topology. Arens square. Simplified Arens square. Niemytzki's tangent disc topology. Metrizable tangent disc topology. Sorgenfrey's half-open square topology. Michael's product topology. Tychonoff plank. Deleted Tychonoff plank. Alexandroff plank. Dieudonné plank. Tychonoff corkscrew. Deleted Tychonoff corkscrew. Hewitt's condensed corkscrew. Thomas' plank. Thomas' corkscrew. Weak parallel line topology. Strong parallel line topology. Concentric circles. Appert space. Maximal compact topology. Minimal Hausdorff topology. Alexandroff square. Z^Z . Uncountable products of Z^+ . Baire product metric on R^ω . I^I . $(0, \Omega) \times I^I$. Helly space. $C[0, 1]$. Box product topology on R^ω . Stone-Cech compactification. Stone-Cech compactification of the integers. Novak space. Strong ultrafilter topology. Single ultrafilter topology. Nested rectangles. Topologists' sine curve. Closed topologist's sine curve. Extended topologist's sine curve. The infinite broom. The closed infinite broom. The integer broom. Nested angles. The infinite cage. Bernstein's connected sets. Gustin's sequence space. Roy's lattice space. Roy's lattice subspace. Cantor's leaky tent. Cantor's teepee. A pseudo-arc. Miller's biconnected set. Wheel without its hub. Tangora's connected space. Bounded metrics. Sierpinski's metric space. Duncan's space. Cauchy completion. Hausdorff's metric topology. The post office metric. The radial metric. Radial interval topology. Bing's discrete extension space. Michael's closed subspace. — *Metrization theory*. — *Appendices*.

Journées d'analyse non linéaire. — Proceedings, Besançon, France, June 1977. — Edité par P. Bénilan et J. Robert. — Lecture Notes in Mathematics, vol. 665. — Un vol. broché, 16,5 × 24,5, de viii, 256 p. — Prix: DM 28.50. — Springer Verlag, Berlin/Heidelberg/New York, 1978.

H. Attouch: Convergence de fonctionnelles convexes. — *J. M. Ball, R. J. Knops, J. E. Marsden*: Two examples in nonlinear elasticity. — *A. Damlamian*: Sur certaines équations quasi-linéaires de type « divergentielle » d'ordre arbitraire. — *G. Duvaut*: Homogénéisation des plaques à structure périodique en théorie non linéaire de Von Karman. — *A. Fougères, J. G. Peralba*: Application au calcul des variations de l'optimisation intégrale convexe. — *J. P. Gossez*: Sur certains problèmes de Dirichlet fortement non linéaires à la résonance. — *P. Hess*: Perturbations non linéaires de problèmes linéaires à la résonance: existence de multiples solutions. — *M. T. Lacroix*: Echelle d'espaces intermédiaires entre un espace de Sobolev-Orlicz et un espace d'Orlicz. Trace d'espaces de Sobolev-Orlicz avec poids. — *U. Mosco*: Sur l'existence de la solution régulière de l'inéquation quasi-variationnelle non linéaire du contrôle optimal impulsif et continu. — *O. A. Oleinik*: On the Navier-Stokes equation in a domain with the moving boundary. — *L. A. Peletier*: A nonlinear eigenvalue problem occurring in population genetics. — *J. P. Puel*: Un problème de valeur propre non linéaire et de frontière libre. — *J. Simon*: Régularité de la solution d'une équation non linéaire dans \mathbf{R}^N . — *L. Tartar*: Une nouvelle méthode de résolution d'équations aux dérivées partielles non linéaires. — *J. R. L. Webb*: Strongly nonlinear elliptic equations.

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HISTORICAL PAPERS: *F. Burton Jones*: Wilder on connectedness. *Frank Raymond*: R. L. Wilder's work on generalized manifolds. An appreciation. *Lucille Whyburn*: R. L. Moore's first doctoral student at Texas. — **RESEARCH PAPERS:** *Robert F. Brown*: A homological characterization of inner automorphisms of compact Lie groups. *Gregory W. Brumfiel*: Realizing homology classes by PL manifolds. *Leon W. Cohen*: Topology and measure. *Morton Curtis and George Terrell*: HP^∞ , Genuine and counterfeit. *S. Ferry*: On a space of group actions. *Michael H. Freedman*: Remarks on the solution of first degree equations in groups. *Morris W. Hirsch*: Flat manifolds and the cohomology of groups. — *Lowell Jones*: Two characteristic classes and Smith theory. *Charles N. Maxwell*: The degree of multiple-valued maps of spheres. *Clint McCrory*: Stratified general position. *M. L. Michelsohn*: Clifford bundles, spinor bundles and Dirac operators. *Walter D. Neumann and Frank Raymond*: Seifert manifolds, plumbing, μ -invariant and orientation reversing maps. *Ted Petrie*: G surgery I: a survey. *Martin Scharlemann*: Smooth CE maps and smooth homeomorphism.

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M. S. Baouendi et C. Goulaouic: Le théorème de Nishida pour le problème de Cauchy abstrait par une méthode de point fixe. — *M. S. Baouendi et E. C. Zachmanoglou*: Unique continuation theorems for solutions of partial differential equations and inequal-

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J. F. BERGLUND, H. D. JUNGHENN, P. MILNES. — **Compact right topological semi-groups and generalizations of almost periodicity.** — Lectures notes in mathematics, vol. 663. — Un vol. broché, $16,5 \times 24,4$, de x, 243 p. — Prix: DM 27.00. — Springer Verlag: Berlin/Heidelberg/New York, 1978.

Preliminaries : Semigroups. Actions. Means. Semigroups of means. — *The structure of compact semigroups* : Algebra. Compact right topological semigroups. Compact right topological groups. Compact affine right topological semigroups. Support of means. — *Subspaces of $C(S)$ and compactifications of S* : General theory of affine compactifications. General theory of non-affine compactifications. The *WLUC*-affine compactification. The *LMC*-compactification. The *LUC*-compactification. The *K*-compactification. The *CK*-affine compactification. The *WAP*-compactification. The *AP*-compactification. The *SAP*-compactification. The *LWP*-compactification. The *KWP*-compactification. The *CKWP*-affine compactification. Inclusion relationships among the subspaces. Extension of functions. Direct sums of subspaces of $C(S)$. — *Fixed points and left invariant means on subspaces of $C(S)$* : Fixed points of affine flows and left invariant means. Fixed points of flows and multiplicative left invariant means. — *Examples* : Structure examples. Extension examples and examples to show the subspaces can be different. — *Appendix A* : An approach through category theory. — *Appendix B* : Synopsis.

Higher set theory. — Proceedings, Oberwolfach, Germany, April 13-23, 1977. — Edited by G. H. Müller and D. S. Scott. — Lecture Notes in Mathematics, vol. 669. — Un vol. broché, $17,5 \times 24,5$, de xii, 476 p. — Prix: DM 42.50. — Springer Verlag Berlin/Heidelberg/New York, 1978.

U. Felgner, T. B. Flannagen : Wellordered subclasses of proper classes. — *H. Friedman* : A proof of foundation from axioms of cumulation. Categoricity with respect to ordinals. Classically and intuitionistically provably recursive functions. — *K. Gloede* : Hierarchies

of sets definable by means of infinitary languages. — *P. Hájek* : Some results on degrees of constructibility. — *H. R. Jervell* : Constructive universes I. — *A. Kanamori, M. Magidor* : The evolution of large cardinal axioms in set theory. — *A. S. Kechris* : Forcing in analysis. — *A. Louveau* : Recursiveness and compactness. — *W. Maass* : Fine structure theory of the constructible universe in α -and β recursion theory. — *W. Marek, P. Zbierski* : On a class of models of the n^{th} order arithmetic. — *A. R. D. Mathias* : $0^\#$ and the p -point problem. — *K. Mc Aloon* : A combinatorial characterization of inaccessible cardinals. — *M. Srebrny* : Singular cardinals and analytic games. — *K. Steffens* : Regressive functions and stationary sets. — *P. Štěpánek* : Cardinals in the inner model HOD. — *J. Stern* : Partitions of the real line into χ_1 , closed sets. — *G. Takeuti* : Gödel numbers of product spaces. — *J. Truss* : A note on increasing sequences of constructibility degrees.

The structure of attractors in dynamical systems. — Proceedings, North Dakota State University, June 20-24, 1977. — Edited by N. G. Markley, J. C. Martin and W. Perrizo. — Lecture Notes in Mathematics, vol. 668. — Un vol. broché, 16,5 × 24,5, de vi, 264 p. — Prix: DM 28.50. — Springer Verlag, Berlin/Heidelberg/New York, 1978.

Roy Adler and Brian Marcus : Finitistic coding for shifts of finite type. — *Steve Batterson* : Periodic points and Lefschetz numbers. — *Rufus Bowen* : Entropy and the fundamental group. — *C. Conley and Joel Smoller* : Isolated invariant sets of parameterized systems of differential equations. — *James H. Curry and James A. Yorke* : A transition from Hopf bifurcation to chaos: computer experiments with maps on R^2 . — *Robert L. Devaney* : Transverse heteroclinic orbits in the anisotropic Kepler problem. — *Douglas Dokken* : A note on a distallity theorem of C. C. Moore. — *Robert Easton* : Chain transitivity and the domain of influence of an invariant set. — *Robert Ellis* : Cohomology of flows. — *John Franks* : The structure of Smale diffeomorphisms. — *Hillel Furstenberg and Benjamin Weiss* : The finite multipliers of infinite ergodic transformations. — *Leon W. Green* : Applications of ergodic theory to geometry. — *Harold M. Hastings* : On expansive homeomorphisms of the infinite torus. Shape theory and dynamical systems. — *Russell A. Johnson* : On a theorem of Sell. — *H. B. Keynes and D. Newton* : Lifting in non-Abelian (G, τ) -extensions. — *Nelson G. Markley and Michael E. Paul* : Recipe minimal sets. — *Marion Rachel Palmer, William Parry and Peter Walters* : Large sets of endomorphisms and of g -measures. — *William Perrizo* : A linearization process for flows. — *Clark Robinson* : Introduction to the closing lemma. — *Peter Walters* : On the pseudo orbit tracing property and its relationship to stability. — *F. Wesley Wilson, jr.* : A reformulation of Coleman's conjecture concerning the local conjugacy of topologically hyperbolic singular points. — *Robert J. Zimmer* : Ergodic actions and stochastic processes on groups and homogeneous spaces.

Fonctions de plusieurs variables complexes III. — Séminaire François Norguet, octobre 1975-juin 1977. — Édité par François Norguet. — Lecture Notes in Mathematics, vol. 670. — Un vol. broché, 16,5 × 24,5, de xii, 394 p. — Prix: DM 39.00. — Springer Verlag, Berlin/Heidelberg/New York, 1978.

C. Banica : Homologie et dualité en géométrie analytique complexe. — *G. Roos* : Recollement universel de noyaux. Sur les intégrales premières de certains feuilletages analytiques complexes. — *M. Suzuki* : Sur les intégrales premières de certains feuilletages analytiques complexes. Sur les opérations holomorphes de \mathbf{C} et de \mathbf{C}^* sur un espace de Stein. — *Z. Mebkhout* : Cohomologie locale d'une hypersurface. — *B. Moishezon* : Topological questions in the theory of algebraic surfaces. — *J. L. Ermine* : Conjecture

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Jacek GILEWICZ. — **Approximants de Padé.** — Lecture notes in mathematics, vol. 667. — Un vol. broché, 16,5 × 24,5, de XIV, 511 p. — Prix: DM 43.00. — Springer Verlag, Berlin/Heidelberg/New York, 1978.

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RATIONAL HOMOTOPY THEORY: *R. Douglas*: The uniqueness of coproduct decompositions for algebras over a field. — *J. Stasheff*: Rational homotopy-obstruction and perturbation theory. — **COHOMOLOGY THEORIES: BUNDLE THEORY:** — *A. Dold*: Geometric cobordism and the fixed point transfer. — *H. Glover, B. Homer and G. Mislin*: Immersions in manifolds of positive weights. — *R. Kane*: BP homology and finite H -spaces. — *F. Sigrist and U. Suter* (with the collaboration of P. J. Erard): On immersions $CP^n \xrightarrow{\sigma} \mathbb{R}^{4n-2\alpha(n)}$. — *F. Sigrist and U. Suter*: On the exponent and the order of the groups $J(X)$. — *V. Snaith*: Stable decompositions of classifying spaces with applications to algebraic cobordism

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R. T. SMYTHE, John C. WIERNAN. — **First-passage percolation on the square lattice.** — Lecture Notes in Mathematics, vol. 671. — Un vol. broché, 17 × 25, de VIII, 196 p. — Prix: DM 25.00. — Springer Verlag, Berlin/Heidelberg/New York, 1978.

Introduction. — Preliminaries. — Bernoulli percolation. — Definition of the basic processes and the existence of routes. — Convergence of the first-passage processes. — Renewal theory for percolation processes. — The time constant. — Route length and the height process. — Other percolation models on the square lattice. — Conjectures and open problems. — *Appendix A*: The FKG inequality. — *Appendix B*: Ergodic theorems for subadditive processes.

Robert L. TAYLOR. — **Stochastic convergence of weighted sums of random elements in linear spaces.** — Lecture notes in mathematics, vol. 672. — Un vol. broché, 17 × 25, de VII, 216 p. — Prix: DM 25.00. — Springer Verlag, Berlin/Heidelberg/New York, 1978.

Mathematical preliminaries. — Random elements in linear spaces. — Laws of large numbers, uncorrelation, and convergence of weighted sums of random variables. — Laws of large numbers in normed linear spaces. — Convergence of weighted sums in normed linear spaces. — Randomly weighted sums. — Laws of large numbers in $D[0, 1]$. — Possible applications.

Zbigniew FIEDOROWICZ, Stewart PRIDDY. — **Homology of classical groups over finite fields and their associated infinite loop spaces.** — Lecture notes in mathematics, 674. — Un vol. broché, 17 × 25, de VI, 434 p. — Prix: DM 39.00. — Springer Verlag, Berlin/Heidelberg/New York, 1978.

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Janos GALAMBOS, Samuel KOTZ. — **Characterizations of probability distributions:** a unified approach with an emphasis on exponential and related models. — Lecture Notes in Mathematics, vol. 675. — Un vol. broché, 17 × 25, de viii, 169 p. — Prix: DM 21.50. — Springer Verlag, Berlin/Heidelberg/New York, 1978.

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Mengen: Definitionen. Der naiv-modelltheoretische Standpunkt. Wie findet man Axiomensysteme der Mengenlehre? Der Russel'sche Widerspruch. Typen und Hierarchien. Zermelo'sche Mengenlehre. Klassen und die Mengenlehren *NBG*, *QM* und *ZF*. Sprachliches über mengentheoretische Formeln und Anwendungen. Der naiv-syntaktische Standpunkt. Relationen und Funktionen. Äquivalenzrelationen und Partitionen. Ordnungen. Hüllensysteme. — *Hilfsmittel aus der Algebra*: (Binäre) Algebren. Halbgruppen und Monoide. Gruppen. Ringe. Lokalisierung. Geordnete Algebren. — *Natürliche Zahlen*: Einleitung. Natürliche Monoide. Dedekind-Tripel. Mengentheoretische Beispiele von Mengen natürlicher Zahlen. Die additive Gruppe der ganzen Zahlen. Der Ring der ganzen Zahlen und sein Quotientenkörper. Natürlich geordnete Mengen. Endliche Mengen. Autonome Theorien endlicher Mengen. Weiteres über Rekursionsverfahren, endliche Kombinatorik. Anfänge der Arithmetik. Rekursive Funktionen. Abzählbare Mengen. Fundierte Relationen. Das Auswählen aus nicht leeren Mengen.

Walter FELSCHER. — **Naive Mengen und abstrakte Zahlen II.** — Un vol. broché, 14 × 21, de 222 p. — Prix: DM 24.00. — Bibliographisches Institut-Wissenschaftsverlag, Mannheim/Wien/Zürich, 1978.

Algebraische Zahlen: Elementare Einführung algebraischer Zahlen. Polynome und ihre Nullstellen. Komplexe Zahlen. Ideale Primfaktoren und ideale Zahlen. Dedekind's Einführung der Ideale und weiterer Konstruktionen. Kronecker'sche Divisionen. Die Methode der Unbestimmten und das Kronecker'sche Programm. — *Reelle Zahlen*: Transzendenten Zahlen. Hilfsmittel über geordnete Mengen. Vervollständigungen geordneter Mengen. Hilfsmittel über geordnete Gruppen und Ringe. Vervollständigungen geordneter Gruppen und Körper. Die Struktur archimedischer totalgeordneter Gruppen. Die Struktur archimedischer totalgeordneter Ringe und Körper. Eudoxische Gruppen. Konvergente Folgen. Komplettierungen. G -adische Bruchdarstellungen. Offene und abgeschlossene Mengen reeller Zahlen. Zahlen und Größen.

Günther EISENACK und Christian FENSKE. — **Fixpunkttheorie.** — Un vol. broché, 14 × 21, de 258 p. — Prix: DM 38.00. — Bibliographisches Institut-Wissenschaftsverlag, Mannheim/Wien/Zürich.

Kontrahierende Abbildungen: Der Banachsche Fixpunktsatz. Die Kontraktionseigenschaft. Das Kontraktionsprinzip bei verallgemeinertem Abstandsbegriff. — *Die Fixpunkteigenschaft*: Der Brouwersche Fixpunktsatz. Fixpunkträume. Der Fixpunktsatz von Schauder-Tychonoff. — *Der Lefschetzsche Fixpunktsatz*: Begriffe aus der algebraischen Topologie. Der Lefschetzsche Fixpunktsatz. — *Der Abbildungsgrad für differenzierbare Abbildungen*: Analyse des Problems: Eindeutigkeit. Synthese: Existenz des Abbildungsgrades. Ein Spezialfall: Verdichtende Abbildungen. — *Der Abbildungsgrad für stetige Abbildungen*: Endlichdimensionaler Fall. Der Antipodensatz. Exkurs: Gradientenoperatoren. Kompakte Abbildungen. Verdichtende Abbildungen. — *Verzweigungstheorie*: Verzweigung bei einfachen Eigenwerten. Ein globales Resultat. — *Der Fixpunktindex*: Definition und Eigenschaften des Index. Wesentliche Fixpunkte. — *Asymptotische Fixpunktsätze*: Fixpunkte von iterierten Abbildungen. Abbildungen mit kompakten Iterierten. Abstossende Fixpunkte. Ein Spezialfall: Kompakte konvexe Mengen. Anziehende Fixpunkte und Verzweigungstheorie. — *Varia*: Fixpunkte homotoper Abbildungen. Projektionsmethoden. Gemeinsame Fixpunkte. Fixpunkte mengenwertiger Abbildungen. — *Anhang*: Fredholmoperatoren und Fredholmabbildungen. Absolute Umgebungsretrakte. Ergänzungen zur Homologie theorie.

Rolf WALTER. — **Differentialgeometrie.** — Un vol. broché, 14 × 21, de III, 278 p. — Prix: DM 28.00. — Bibliographisches Institut-Wissenschaftsverlag, Mannheim/Wien/Zürich, 1978.

Elementare Differentialgeometrie: Grundlegendes über Kurven. Kurven im \mathbf{R}^2 . Vierscheitelsatz. Kurven im \mathbf{R}^3 . Flächenstücke im \mathbf{R}^3 . Die Abbildungen von Gauss und Weingarten. Die Rolle der zweiten Fundamentalform. Regelflächen. Nulllinien Pfaffscher Formen in \mathbf{R}^2 und Anwendungen. — *Riemannsche Geometrie*: Definition und einfache Eigenschaften. Der Levi-Civita-Zusammenhang. Die Methode der Basisfelder (Cartanscher Kalkül). Wechsel des Basisfeldes. Spezialisierung auf den zweidimensionalen Fall. Parallelverschiebung. Geodätische und Exponentialabbildung. Die Schnittkrümmung. Radiale Entwicklung. — *Hyperflächen im euklidischen Raum*: Grundlegendes über Hyperflächenimmersionen. Die Methode der bewegten Basen. Die Abbildungen von

Gauss und Weingarten. Nabelpunktsimmersionen. Isometrie und Kongruenz. Der Kalkül von K. Voss. Die Integralformeln von Minkowski. Globale Kennzeichnungen der Sphären. Der Kongruenzsatz von Cohn-Vossen. — *Der Satz von Gauss-Bonnet*: Der Kalkül von Flanders. Die Chern-Gleichung. Gauss-Bonnet-Chern-Integral und reguläre Nullstellen von Vektorfeldern. Allgemeiner Index und Euler-Charakteristik. Der Integralsatz von Gauss-Bonnet mit Rand. Berechnung der Euler-Charakteristik durch nichtausgeartete Funktionen. — *Kovariante Ableitung von Tensorfeldern*. — Anhänge: Multilineare Algebra. Differenzierbare Mannigfaltigkeiten.

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Jahrbuch Überblicke Mathematik 1978. — Hrsg. von Benno Fuchssteiner, Ulrich Kulisch, Detlef Laugwitz und Roman Liedl. — Un vol. broché, 14 × 21, de 223 p. — Prix: DM 28.00. — Bibliographisches Institut-Wissenschaftsverlag, Mannheim/Wien/Zürich, 1978.

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Vektorielle Geometrie im \mathbf{R}^2 und \mathbf{R}^3 . Vektorräume. Lineare Abbildungen. Matrizen. Lineare Gleichungssysteme. Determinanten. Eigenwerte und Eigenvektoren. Euklidische und unitäre Vektorräume. Quadratische Formen und Flächen bei \mathbf{R}^n . Affine und euklidische Geometrie. Quadratische Formen und Quadriken.

Heinrich WERNER. — **Einführung in die allgemeine Algebra.** — B. I. Hochschultaschenbücher, vol. 120. — Un vol. broché, 12,5 × 19, de 146 p. — Prix: DM 9.90. — Bibliographisches Institut-Wissenschaftsverlag, Mannheim/Wien/Zürich, 1978.

Einleitung. Mengen, Kategorien. Algebren, Unteralgebren. Hüllensysteme. Homomorphismen, Kongruenzrelationen. Homomorphiesätze. Kongruenzrelationenverbände. Direkte und subdirekte Produkte. Terme und Polynome. Freie Algebren. Gleichungssysteme. Funktional vollständige Algebren. Der Chinesische Restsatz.

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Das bestimmte Integral. Integrationsregeln und -sätze. Differenzierbarkeit und Ableitung. Differentiationsregeln und -sätze. Stammfunktion und Hauptsatz der Infinitesimalrechnung. Partielle Integration und Integralsubstitution. Weitere Integrationsmethoden. Das uneigentliche Integral. Verallgemeinerter Mittelwertsatz und L'HOSPITALsche Regeln. Die Bogenlänge einer Kurve. Funktionen auf einer Kurve und Kurvenintegral. Die TAYLORsche Formel. Die TAYLORsche Reihe. Stückweise stetige Funktionen und FOURIERsche Formel. Die FOURIERsche Reihe. Funktionenfolgen und -reihen, Grenzfunktion. Gleichmässige Konvergenz. Grenzübergänge in Folgen und Reihen. Integration und Differentiation von Folgen und Reihen. Offene Mengen, Randmengen, zulässige Mengen, Gebiete. Die partielle Ableitung. Kettenregel, Mittelwertsatz und TAYLORentwicklung im \mathbf{R}^n . Differenz und Differential. Extremalprobleme.

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Hans SCHWERDTFEGER. — **Introduction to group theory.** — Un vol. broché, 14,5 × 22,5, de xvi, 238 p. — Prix: Dfl. 50.00. — Noordhoff International Publishing, Leyden, 1976.

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Recent developments in variable structure systems, economics and biology: proceedings of US -Italy Seminar, Taormina, Sicily, August 29-September 2, 1977. — Edited by R. R. Mohler and A. Ruberti. — Lecture notes in economics and mathematical systems, vol. 162. — Un vol. broché, 16,5 × 24, de vi, 326 p. — Prix: DM 32.00. — Springer Verlag, Berlin/Heidelberg/New York, 1978.

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— PROBLEMES.

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Grundlagen: Matrizen, Vektoren, Determinanten. Ableitungen von Linearformen und quadratischen Formen. Zufällige Vektoren und mehrdimensionale Normalverteilung. Lineare Transformationen normalverteilter zufälliger Vektoren. Wahrscheinlichkeitsverteilungen zufälliger quadratischer Formen — χ^2 -Verteilung — F -Verteilung. Stichproben und Stichprobenfunktionen — t -Verteilung. Signifikanztests — Punktschätzungen — Konfidenzintervalle. — *Das allgemeine lineare Modell der Mathematischen Statistik*: Definition und Matrixform des allgemeinen linearen Modells. Die Methode der kleinsten Quadrate als Schätzprinzip. — Das GAUSS-MARKOV-Theorem. Reparametrisation. Eine kanonische Darstellung linearer Modelle und eine Punktschätzung für σ^2 . Einfacher und doppelter t -Test. Konfidenzintervalle für schätzbare Funktionen. Ein Test zum Prüfen linearer Hypothesen. Linearitätstest von R. A. FISHER. — *Regressionsanalyse*

Modell I: Das Modell der linearen Regression. Punktschätzungen und Konfidenzintervalle für Regressionskoeffizienten und Regressionsfunktionen. Tests zum Prüfen von Hypothesen bez. der Regressionskoeffizienten. Lineare Regression mit unterschiedlicher Genauigkeit. Quasilineare Regression. BOX-WILSON-Methode. — *Varianzanalyse* — *Modell I*: BARTLETT-Test. Einfache Klassifikation im Modell I. Lineare Kontraste (SCHEFFÉ-Test und EVOP-Programme). Kreuzklassifikation im Modell I (ohne Wiederholungen). Additivitätstest von TUKEY. Kreuzklassifikation im Modell I (mit Wiederholungen in gleicher Anzahl). Kreuzklassifikation im Modell I (mit Wiederholungen in ungleicher Anzahl). Zweifache hierarchische Klassifikation im Modell I. — *Kovarianzanalyse*: (1,1)-Klassifikation der Kovarianzanalyse (einfache Klassifikation mit einer Kovariablen). (2,1)-Klassifikation der Kovarianzanalyse (zweifache Klassifikation ohne Wiederholungen mit einer Kovariablen). (2,2)-Klassifikation der Kovarianzanalyse (zweifache Klassifikation ohne Wiederholungen mit zwei Kovariablen). — *Diskriminanzanalyse*: Diskriminanzanalyse — Typ 2. Diskriminanzanalyse — Typ N ($N > 2$). — *Varianzanalyse* — *Modell II*: Einfache Klassifikation im Modell II. Kreuzklassifikation im Modell II (mit Wiederholungen in gleicher Anzahl). Zweifache hierarchische Klassifikation im Modell II. Kreuzklassifikation im gemischten Modell (mit Wiederholungen in gleicher Anzahl). — *Korrelationsanalyse (Regressionsanalyse — Modell II)*: Korrelationsanalyse mittels des einfachen Korrelationskoeffizienten. Korrelationsanalyse mittels der partiellen Korrelationskoeffizienten. Korrelationsanalyse mittels der multiplen Korrelationskoeffizienten. — *Abschliessende Bemerkungen*. — *Anhang*: ALGOL-Programme.

Werner GAEHLER. — **Grundstrukturen der Analysis**, Band 2. — Mathematische Reihe, Band 61. — Un vol. relié, 17 × 24,5, de viii, 623 p. — Prix: Fr. 92.00. — Birkhäuser Verlag, Basel/Stuttgart, 1978.

Limitierte Algebra: Gruppen. Radialräume. Vektorräume. Limitierte Gruppen, limitierte Radialräume, limitierte Vektorräume. Die assoziierten verträglichen Limitierungen, Pseudotopologien, mehrstufigen Topologien und Topologien. Über der die Limesuniformisierbarkeit limitierter Gruppen. Verallgemeinerte limitierte Radialräume, limitierte lineare Gruppen. Gleichförmigkeit, Kreisförmigkeit und Ausgeglichenheit. Lokale Konvexität. Die assoziierten lokalkonvexen Limitierungen. Initiallimitierungen. Beziehungen zwischen Initiallimitierungen und den Funktoren $\#$, $+$ und \wedge . Finallimitierungen bezüglich Gruppenhomomorphismen. Finallimitierungen bezüglich homogener Abbildungen. Finallimitierungen bezüglich linearer Abbildungen. Beziehungen zwischen Finallimitierungen und den Funktoren $\#$, $+$ und \wedge . Verallgemeinerte Halbmetriken und verallgemeinerte Halbnormen. Beschränktheitsbegriffe. Lokale Beschränktheit. Vervollständigung pseudotopologischer Vektorräume. Adjungierte Funktoren. Über reflektive und coreflektive Unterkategorien. Tensorprodukte und monoidale Kategorien. Hypobornologien. — *Mengenkonvergenz*: Der abgeschlossene Limes. Der Fall der mehrstufigen Topologie und der Topologie. Der offene Limes. Mengenkonvergenz, die von Systemen von \wedge -Idealen von Dualfiltern abhängt. Drei Spezialfälle. — *Abbildungsräume*: Stetige Konvergenz. Abgeschlossene Konvergenz der Graphen. Der Fall, dass c eine mehrstufige Topologie bzw. eine Topologie ist. Die Räume $C_c(X, Y)$ und $L_c^n(X, Y)$. Punktweise Konvergenz. Kompaktheitskriterien bezüglich der stetigen Konvergenz. MARINESCU-Konvergenz. Abgeschlossene Kategorien. Verallgemeinerte gleichmässige Konvergenz. Die limesuniforme Struktur der verallgemeinerten gleichmässigen Konvergenz. Der Fall, dass Y eine abelsche pseudotopologische Gruppe ist. Drei Spezialfälle, Beispiele. Vergleich der verschiedenen Konvergenzarten. Die Räume $L_{B,k}^n(X, Y)$ und $H_{B,k}^n(X, Y)$. K -Uniformität, B , k -Gleichförmigkeit. Die Stetigkeit der Kompositionen.

abbildung. — *Differentialrechnung*: Der allgemeine Ableitungsbegriff, Restglieddefinitionen nach GIL DE LAMADRID. Weitere Restglieddefinitionen. \mathbb{R} -Bereiche und der lokale Charakter der Differenzierbarkeit. Vergleich der verschiedenen Ableitungsbegriffe. Beispiele. Einige Differenzierbarkeitseigenschaften. Der Fundamentalsatz, die Kettenregel. Stetige Ableitungen, C^1 -Abbildungen. Partielle Ableitungen. Ableitungen höherer Ordnung. Einige Eigenschaften der Ableitungen höherer Ordnung. Restglieder höherer Ordnung. Der TAYLORSche Lehrsatz. Die Kettenregel höherer Ordnung. C^n -Abbildungen. Einige Eigenschaften der C^n -Abbildungen.

Franz-Josef FRITZ, B. HUPPERT, W. WILLEMS. — **Stochastische Matrizen**. — Hochschultext. — Un vol. broché, 16,5 × 24, de viii, 191 p. — Prix: DM 32.00. — Springer Verlag, Berlin/Heidelberg/New York, 1979.

Problemstellung. — Eigenwerte stochastischer Matrizen. — Die Konvergenzsätze. — Weitere Eigenwertabschätzungen für stochastische Matrizen. — Irrfahrten und verwandte Probleme. — Mischen von Spielkarten. — Warteschlangen. — Prozesse mit absorbierenden Zuständen. — Übergangszeiten. — Abgeleitete stochastische Matrizen.

Helmut WERNER, Robert SCHABACK. — **Praktische Mathematik II**: Methoden der Analysis. — Nach Vorlesungen an den Universitäten Münster und Göttingen, hrsg. mit Unterstützung von J. Ebert. — 2., neubearb. und erw. Auflage. — Hochschultext. — Un vol. broché, 16,5 × 24, de viii, 388 p. — Prix: DM 38.00. — Springer Verlag, Berlin/Heidelberg, New York, 1979.

Interpolation: Polynominterpolation. Differenzenquotienten. Die numerische Behandlung der Interpolationsaufgabe; NEWTONsche Interpolationsformel. TSCHEBYSCHEFF-Systeme, Trigonometrische Interpolation. Rationale Interpolation. — *Approximationstheorie*: Der Existenzsatz für lineare Approximationen. Diskrete lineare TSCHEBYSCHEFF-Approximation. Der REMES-Algorithmus. Approximation in euklidischen Räumen. Orthogonale Funktionen. Der Satz von WEIERSTRASS. Konvergenz von Approximationen. — *Spline-Funktionen und die Darstellung linearer Funktionale*: Spline-Funktionen. Satz von PEANO und Charakterisierung von Spline-Funktionen. Interpolation mit Spline-Funktionen. B-Splines. Beste Approximationen linearer Funktionale. Numerische Integration. Konvergenzfragen bei der numerischen Quadratur. — *Numerische Methoden für Anfangswertprobleme bei gewöhnlichen Differentialgleichungen*: Definition und Aufgabenstellungen. Existenzsätze für die Lösung des Anfangswertproblems. Stetigkeitsbetrachtungen für Anfangswertprobleme. Die differenzierbare Abhängigkeit der Lösungen eines Anfangswertproblems von Parametern. Lineare Differentialgleichungen und Differenzengleichungen n -ter Ordnung mit konstanten Koeffizienten. Allgemeine Theorie der Einschrittverfahren. Klassische Einschrittverfahren. Spezielle Mehrschrittverfahren, Prädiktor-Korrektor-Methoden. Allgemeine lineare Mehrschrittverfahren. Asymptotische Entwicklung des Fehlers bei linearen Mehrschrittverfahren. Die Stabilitätsaussagen von DAHLQUIST.

H. B. GRIFFITHS, P. J. HILTON. — **A comprehensive textbook of classical mathematics: a contemporary interpretation**. — Reprint. — Un volume broché, 16 × 24, de xxix, 637 p. — Prix: DM 44.00. — Springer Verlag, New York/Heidelberg/Berlin, 1978.

The language of mathematics: Descriptive theory of sets. Functions: descriptive theory. The Cartesian product. Relations. Mathematical induction. — *Further set theory*: Sets of functions. Counting and transfinite arithmetic. Algebra of sets and the propositional

calculus. — *Arithmetic* : Commutative rings and fields. Arithmetic mod m . Rings with integral norm. Factorization into primes. Applications of the theory of HCF's. — *Geometry of \mathbf{R}^3* : Vector geometry of \mathbf{R}^3 . Linear algebra and measure in \mathbf{R}^3 . Appendix: length and area. The logic of geometry. Projective geometry. — *Algebra* : Groups. Vector spaces and linear equations. Inner product spaces and duality. Inequalities and Boolean algebra. Polynomials and equations of degree n . — *Number systems and topology* : The rational numbers. The real and complex numbers. Topology of \mathbf{R}^n . — *Calculus* : The algebra \mathbf{R}^I . Limiting processes. Continuous functions. Differentiable functions. Integration. — *Additional topics in the calculus* : The logarithm and the exponential function. Differential equations. Complex-valued functions. Approximation and iteration. Functions of several real variables. Vector-valued functions. C^r -functions. — *Foundations* : Categories and functors. Mathematical logic.

Sofya KOVALEVSKAYA. — **A Russian childhood.** — Translated, edited and introduced by Beatrice Stillman, with an analysis of Kovalevskaya's mathematics by P. Y. Kochina. — Un vol. relié, 16 × 24, de xiv, 250 p. — Prix: DM 33.00. — Springer Verlag, New York/Heidelberg/Berlin, 1978.

Introduction. — Earliest memories. — The thief. — Metamorphosis. — Palibino. — Miss Smith. — Uncle Pyotr Vasilievich Krukovksy. — Uncle Fyodor Fyodorovich Shubert — My sister. — Anyuta's nihilism. — Anyuta's first literary experiments. — Our friendship with Fyodor Mikhailovich Dostoevsky. — Notes. — An autobiographical sketch. — P. Y. Polubarinova-Kochina: "On the scientific work of Sofya Kovalevskaya".

Robert J. WALKER. — **Algebraic curves.** — Un vol. broché, 15,5 × 23,5. — Prix: DM 22.00. — Springer Verlag, New York/Heidelberg/Berlin, 1978 (Reprint).

Algebraic preliminaries : Set theory. Integral domains and fields. Quotient fields. Linear dependence and linear equations. Polynomials. Factorization in polynomial domains. Substitution. Derivatives. Elimination. Homogeneous polynomials. — *Projective spaces* : Projective spaces. Linear subspaces. Duality. Affine spaces. Projection. Linear transformations. — *Plane algebraic curves* ; Plane algebraic curves. Singular points. Intersection of curves. Linear systems of curves. Rational curves. Conics and cubics. Analysis of singularities. — *Formal power series* : Formal power series. Parametrizations. Fractional power series. Places of a curve. Intersection of curves. Plücker's formulas. Nöther's theorem. — *Transformations of a curve* : Ideals. Extensions of a field. Rational functions on a curve. Birational correspondence. Space curves. Rational transformations. Rational curves. Dual curves. The ideal of a curve. Valuations. — *Linear series* : Linear series. Complete series. Invariance of linear series. Rational transformations associated with linear series. The canonical series. Dimension of a complete series. Classification of curves. Poles of rational functions. Geometry on a non-singular cubic.

Shiing-shen CHERN. — **Selected papers.** — Published in conjunction with the International symposium in global analysis and global geometry to be held in Berkeley, Calif., June 1979. — Un vol. relié, 18 × 25, de xxi, 476 p. — Prix: DM 52.00. — Springer Verlag, New York/Heidelberg/Berlin, 1978.

Foreword. — André Weil : S. S. Chern as a geometer and friend. — Phillip A. Griffiths : Some reflections on the mathematical contributions of S. S. Chern. — S. S. Chern : A summary of my scientific life and works. — Suivi de 34 exposés choisis par S. S. Chern. — *Bibliography of the publications of S. S. Chern.* — *List of PhD. theses written under the supervision of S. S. Chern.*

I. A. IBRAGIMOV, Y. A. ROZANOV. — **Gaussian random processes.** — Translated by A. B. Aries. — Applications in mathematics, vol. 9. — Un vol. relié, 17 × 25, de x, 275 p. — Prix: DM 49.60. — Springer Verlag, New York/Heidelberg/Berlin, 1978.

Preliminaries: Gaussian probability distribution in a Euclidean space. Gaussian random functions with prescribed probability measure. Lemmas on the convergence of Gaussian variables. Gaussian variables in a Hilbert space. Conditional probability distributions and conditional expectations. Gaussian stationary processes and the spectral representation. — *The structures of the spaces $H(T)$ and $L_T(F)$* : The spaces $L^+(F)$ and $L^-(F)$. The construction of spaces $L_T(F)$ when T is a finite interval. The projection of $L^+(F)$ on $L^-(F)$. The structure of the σ -algebra of events $\mathfrak{U}(T)$. — *Equivalent Gaussian distributions and their densities*: Some conditions for Gaussian measures to be equivalent. General conditions for equivalence and formulas for density of equivalent distributions. Further investigation of equivalence conditions. — *Conditions for regularity of stationary random processes*: Regularity conditions and operators $B\tau$. Conditions for information regularity. Conditions for absolute regularity and processes with discrete time. Conditions for absolute regularity and processes with continuous time. — *Complete regularity and processes with discrete time*: Definitions and preliminary constructions with examples. The first method of study: local conditions. Local conditions (Continued). Corollaries to the basic theorems with examples. Intensive mixing. — *Complete regularity and processes with continuous time*: The investigation of a particular function $\gamma(T; \mu)$. The proof of the basic theorem on necessity. The behavior of the spectral density on the entire line. Sufficiency. A special class of stationary processes. — *Filtering and estimation of the mean*: Unbiased estimates. Estimation of the mean value and the method of least squares. Consistent pseudo-best estimates. Estimation of regression coefficients.

Yuan Shih CHOW, Henry TEICHER. — **Probability theory: independence, interchangeability, martingales.** — Un vol. relié, 17 × 25, de xv, 455 p. — Prix: DM 55.00. — Springer Verlag, New York/Heidelberg/Berlin, 1978.

Classes of sets, measures, and probability spaces. — Binomial random variables. — Independence. — Integration in a probability space. — Sums of independent random variables. — Measure extensions, Lebesgue-Stieltjes measure, Kolmogorov consistency theorem. — Conditional expectation, conditional independence, introduction to martingales. — Distribution functions and characteristic functions. — Central limit theorems. — Limit theorems for independent random variables. — Martingales. — Infinitely divisible laws.

F. REHBOCK. — **Geometrische Perspektive.** — Un vol. relié, 17 × 25, de ix, 155 p. — Prix: DM 29.50. — Springer Verlag, Berlin/Heidelberg/New York, 1979.

Die Zentralprojektion: Aufgabe der geometrischen Perspektive. Bezeichnungen. Zentralbilder. Schatten und Lichtbild. Die Distanz. Verzerrungen. Grundprobleme. Parallele und rechtwinklige Geraden. Winkel und Strecken von gegebener Größe. Kurze historische Übersicht. — *Parallele Geraden und Ebenen*: Der Fluchtpunkt. Der Verschwindungspunkt. Die Fluchtlinie. Die Verschwindungslinie. Spezielle Geraden. Spezielle Ebenen. Ein Beispiel für Breitenebenen. Ein Beispiel für Tiefenebenen. Verschieben und Teilen von Strecken. Das Verschneiden von Ebenen. — *Rechtwinklige Geraden und Ebenen*: Normalen und Normalebenen. N -Fluchtpunkt und N -Fluchtlinie. Fluchtdreieck eines Achsenkreuzes. Bild eines Quaders in allgemeiner Lage. Ausgeartete Fluchtdreiecke. Front- und Eckansichten. Kippansichten. Vogel- und Froschperspektive. — *Winkelmessung*: Der Winkelmesspunkt. Der Drehsehnenfluchtpunkt. Winkel in Tiefenebenen.

Winkel in vertikalen und geneigten Ebenen. Figuren in Wänden. Figuren in Horizontal-ebenen. Figuren in geneigten Ebenen. Theoretisches Intermezzo: Die Perspektivität. — *Streckenmessung*: Der Streckenmesspunkt. Einzeichnen und Messen von Strecken. Achsenmassstäbe für Eckansichten. Beispiele. Kippansichten. Bild eines Kreises. Ausmessen und Ergänzen von Bildern. Rechnerische Methoden. — *Anwendungen und Ergänzungen*: Schattenkonstruktionen. Die Ellipse als Kreisbild. Die Hyperbel als Kreisbild. Ellipsenkonstruktionen. Hyperbel- und Parabelkonstruktionen. Das Aufbauverfahren. Das Schichtenverfahren. Gebundene Perspektive. — *Bilder ohne Texte — Anregungen*.

Ferenc SZIDAROVSKY and Sidney YAKOWITZ. — **Principles and procedures of numerical analysis.** — Mathematical concepts and methods in science and engineering, vol. 14. — Un vol. relié, 16 × 24, de vii, 331 p. — Prix: \$29.40. — Plenum Press, New York/London, 1978.

Preliminaries: Number systems and representations of numbers. Error analysis. Supplementary notes and discussion. — *Approximation and interpolation of functions*: Interpolating polynomials. Uniform approximations. Least squares approximation. Spline functions. Asymptotic properties of polynomial approximations. Supplementary notes and discussion. — Numerical differentiation and integration: Numerical differentiation. Numerical quadrature. Supplementary notes and discussion. — *General theory for iteration methods*: Metric spaces. Examples of metric spaces. Operators on metric spaces. Examples of bounded operators. Iterations of operators. Fixed-point theorems. Systems of operator equations. Norms of vectors and matrices. The order of convergence of an iteration process. Inner products. Supplementary notes and discussion. — *Solution of nonlinear equations*: Equations in one variable. Solution of polynomial equations. Systems of nonlinear equations and nonlinear programming. Supplementary notes and discussion. — *The solution of simultaneous linear equations*: Direct methods. Iteration methods. Matrix conditioning and error analysis. Supplementary notes and discussion. — *The solution of matrix eigenvalue problems*: Preliminaries. Some basic eigenvalue approximation methods. The QR algorithm. Eigenproblem error analysis. Supplementary notes and discussion. — *The numerical solution of ordinary differential equations*: The solution of initial-value problems. The solution of boundary-value problems. The solution of eigenvalue problems. Supplementary notes and discussion. — *The numerical solution of partial differential equations*: The difference method. The method of quasilinearization. The Ritz-Galerkin finite-element approach. Supplementary notes and discussion.

David WILLIAMS. — **Diffusions, Markov processes, and martingales. Volume 1: Foundations.** — Wiley series in probability and mathematical statistics. — Un vol. relié, 16 × 24, de xiii, 237 p. — Prix: £13.50. — John Wiley & Sons, Chichester/New York/Brisbane/Toronto, 1979.

INTRODUCTION TO BROWNIAN MOTION: *Wiener measure*: Wiener's theorem. A converse. Diffusions. Canonical and non-canonical processes. Martingale descriptions of Brownian motion. Lévy's theorem. Trotter's theorem. Local and global properties. Blumenthal's 01 law. Kolmogorov's test. Iterated-logarithm law. Hölder condition. Completions, almost surely. — *Narrow convergence*: Donsker invariance principle. Polish spaces. Narrow convergence of measures. Prohorov's theorem. Narrow convergence in $Pr(W)$. — *Brownian motion in R^n* : Potential theory. Equilibrium potential. Bessel processes. Skew product. Ray-Knight theorem on local time. — SOME CLASSICAL THEORY: *Basic measure theory*: Monotone-class theorems. Daniell-Kolmogorov theorem. Its limitations. Fubini's theorem. Infinite products. Poisson measures. Stochastic process. Modification. — *Classical martingale theory*: Uniform integrability. Conditional expecta-

tions and probabilities. Discrete-parameter martingales. Continuous-parameter supermartingales. Basic definitions. Skorokhod (càdlàg) maps. Doob's regularity theorem. The "usual conditions". Indistinguishability, evanescence. Inequalities and the convergence theorem. Stopping times. Début and section theorems. Stopping times and supermartingales. — *Applications*: Proof of Wiener's theorem. Strong Markov theorem for Brownian motion. Hitting-times, reflection principle, etc. Lévy's downcrossing theorem. Local time. Hitting-time process as subordinator. Pitman's presentation of 3-dimensional Bessel process. Excursion theory. — *Regular conditional probabilities*: Main theorem. Fundamental statements of Markov property. — MARKOV PROCESSES: *Transition functions and resolvents*: Definitions. Hille-Yosida theorems. — *Feller transition functions*: Feller-Dynkin (FD) semigroups. Dynkin's maximum principle. — *Feller-Dynkin processes*: Path regularization. Canonical FD process. Strong Markov theorem for FD processes. Completions. Blumenthal's 01 law. Some fundamental martingales, Dynkin's formula. Quasi-left continuity. Characteristic operator. FD diffusions. Dirichlet problem. — *Additive functionals*: Some basic facts about PCHAFs. Killing. Time-substitution. Volkonskii's formula, Arcsine law, Feller-McKean chain. Feynmann-Kac formula. A Ciesielski-Taylor theorem. Elastic Brownian motion. — *Ray processes*: Motivation. Martin boundary theory for discrete-parameter chains. Probabilistic Doob-Hunt theory (discrete-parameter chains). R. S. Martin's boundary. Doob-Hunt theory for Brownian motion. Ray's theorem: preparatory remarks. Ray-Knight compactification. Ray resolvents. Ray's theorem: analytic part. Branch-points. Ray's theorem: probabilistic part. Strong Markov theorem for Ray processes. The rôle of branch-points. — *Applications*: Martin boundary theory in retrospect. Proof of the Doob-Hunt convergence theorem. Choquet representation of excessive functions. Doob's h -transforms. Time-reversal and related topics. Nagasawa's formula. Strong Markov property under time-reversal. Equilibrium charge. Splitting-times. A first look at chain theory. Chains as Ray processes. Taboo probabilities, first-entrance decompositions. The Q -matrix: DK conditions. Local character condition for Q . Totally instantaneous Q -matrices. Last exits. Excursions. Kingman's solution of the Markov characterization problem. Q -matrix problem: symmetrizable case.

Mathematics today: Twelve informal essays. — Edited by Lynn Arthur Steen. — Un vol. relié, 17 × 24, de VIII, 367 p. — Prix: DM 27.00. — Springer Verlag, New York/Heidelberg/Berlin, 1978.

Lynn Arthur Steen: Mathematics today. — Allen L. Hammond: Mathematics. Our invisible culture. — Ian Richards: Number theory. — Jonathan Alperin: Groups and symmetry. — Roger Penrose: The geometry of the universe. — Philip Thompson: The mathematics of meteorology. — Kenneth Appel and Wolfgang Haken: The four color problem. — Ronald Graham: Combinatorial scheduling theory. — David S. Moore: Statistical analysis of experimental data. — Martin Davis: What is a computation? — Jacob Schwartz: Mathematics as a tool for economic understanding. — Frank C. Hoppensteadt: Mathematical aspects of population biology. — Felix E. Browder and Saunders Mac Lane: The relevance of mathematics.

Mathematics: An introduction to its spirit and use. — With introductions by Morris Kline. — Readings from Scientific American. — Un vol. broché, 21 × 29, de 249 p. — Prix: \$8.80. — W. H. Freeman and Company, San Francisco, 1979.

HISTORY: *Introduction*. — James R. Newman: The Rhind papyrus. — James R. Newman: Review of "Cardano, the gambling scholar" by Ore. — James R. Newman: Review of "Blaise Pascal: the life and work of a realist" by Mortimer. — A. C. Crombie: Des-

cartes. — *I. Bernard Cohen*: Review of "The mathematical papers of Isaac Newton, volume 1: 1664-1666" edited by Whiteside. — *Frederick C. Kreiling*: Leibniz. — *Carl B. Boyer*: The invention of analytic geometry. — **NUMBER AND ALGEBRA: Introduction.** — *Martin Gardner*: The remarkable lore of the prime numbers. — *David Hawkins*: Mathematical sieves. — *Martin Gardner*: A short treatise on the useless elegance of perfect numbers and amicable pairs. — *Martin Gardner*: Diophantine analysis and the problem of Fermat's legendary "last theorem". — *Paul S. Herwitz*: The theory of numbers. — *Martin Gardner*: The hierarchy of infinities and the problems it spawns. — *Philip J. Davis*: Number. — **GEOMETRY: Introduction.** — *Martin Gardner*: Geometric constructions with a compass and a straightedge, and also with a compass alone. — *Martin Gardner*: Elegant triangle theorems not to be found in Euclid. — *Martin Gardner*: Diversions that involve one of the classic conic sections: the ellipse. — *Martin Gardner*: Curves of constant width, one of which makes it possible to drill square holes. — *Martin Gardner*: Curious properties of a cycloid curve. — *Morris Kline*: Projective geometry. — *Martin Gardner*: Geometric fallacies: hidden errors pave the road to absurd conclusions. — *Leonhard Euler*: The Koenigsberg bridges (edited by James R. Newman). — *Martin Gardner*: Various problems based on planar graphs, or sets of "vertices" connected by "edges". — *Martin Gardner*: Topological diversions including a bottle with no inside or outside. — *Morris Kline*: Geometry. — **STATISTICS AND PROBABILITY: Introduction.** — *Warren Weaver*: Statistics. — *Rudolf Carnap*: What is probability? — *Warren Weaver*: Probability. — *Martin Gardner*: On the fabric of inductive logic, and some probability paradoxes. — **SYMBOLIC LOGIC AND COMPUTERS: Introduction.** — *Martin Gardner*: Boolean algebra, Venn diagrams and the propositional calculus. — *John E. Pfeiffer*: Symbolic logic. — *David C. Evans*: Computer logic and memory. — *Louis N. Ridenour*: The role of the computer. — **APPLICATIONS: Introduction.** — *Hugh Lineback*: Musical tones. — *Frederick A. Saunders*: Physics and music. — *A. G. Dalton*: The practice of quality control. — *Leonid Hurwicz*: Game theory and decisions. — *Oskar Morgenstern*: The theory of games. — *William W. Cooper and Abraham Charnes*: Linear programming. — *Horace C. Levinson and Arthur A. Brown*: operations research. — *Solutions to problems in Martin Gardner's articles.*

Otto STEINFELD. — **Quasi-ideals in rings and semigroups.** — Disquisitiones mathematicae hungaricae, vol. 10. — Un vol. relié, 17,5 × 24,5, de xi, 154 p. — Prix: \$14.50. — Akadémiai Kiadó, Budapest, 1978.

Basic concepts. Elementary properties of quasi-ideals. Examples. On Green's \mathcal{H} -relation. On minimal quasi-ideals of semigroups without 0. On minimal (0-minimal) quasi-ideals of rings (semigroups). On minimal (0-minimal) quasi-ideals of semiprime rings (semiprime semigroups). Some decomposition theorems for semiprime rings. Characterizations of regular elements, rings and semigroups by quasi-ideals. Decomposition theorems for regular semigroups. On regular duo elements, rings and semigroups. On some directions of generalizations. — **APPENDIX: Quasi-absorbents in groupoid-lattices:** Basic concepts and examples. On regular and regular duo elements. The main decomposition theorem. Proof of theorem. Some special decomposition theorems. List of problems.

Ryszard ENGELKING. — **Dimension theory.** — North Holland mathematical library, vol. 19. — Un vol. relié, 16 × 23, de ix, 305 p. — Prix: Dfl. 100.00. — North Holland Publishing Company, Amsterdam/Oxford/New York (published in co-edition with) PWN-Polish Scientific Publishers, Warszawa, 1978.

DIMENSION THEORY OF SEPARABLE METRIC SPACES: Definition of the small inductive dimension. The separation and enlargement theorems for dimension 0. The sum, Cartesian product, universal space, compactification and embedding theorems for dimension 0. Various kinds of disconnectedness. The sum, decomposition, addition, enlargement, separation and Cartesian product theorems. Definitions of the large inductive dimension and the covering dimension. Metric dimension. The compactification and coincidence theorems. Characterization of dimension in terms of partitions. Dimensional properties of Euclidean spaces and the Hilbert cube. Infinite-dimensional spaces. Characterization of dimension in terms of mappings to spheres. Cantor-manifolds. Cohomological dimension. Characterization of dimension in terms of mappings to polyhedra. The embedding and universal space theorems. Dimension and mappings. Dimension and inverse sequences of polyhedra. Dimension and axioms. — **THE LARGE INDUCTIVE DIMENSION:** Hereditarily normal and strongly hereditarily normal spaces. Basic properties of the dimension Ind in normal and hereditarily normal spaces. Basic properties of the dimension Ind in strongly hereditarily normal spaces. Relations between the dimensions ind and Ind. Cartesian product theorems for the dimension Ind. — **THE COVERING DIMENSION:** Basic properties of the dimension dim in normal spaces. Relations between the dimension ind, Ind and dim. Characterizations of the dimension dim in normal spaces. Cartesian product theorems for the dimension dim. The compactification and the universal space theorems for the dimension dim. The dimension dim and inverse systems of compact spaces. — **DIMENSION THEORY OF METRIZABLE SPACES:** Basic properties of dimension in metrizable spaces. Characterizations of dimension in metrizable spaces. The universal space theorem. Dimension and mappings in metrizable spaces.

V. G. BOLTYANSKII. — **Optimal control of discrete systems.** — Translated from the Russian by Ron Hardin. — Un vol. relié, 18 × 25, de x, 392 p. — Prix: £28.00. — John Wiley & Sons, New York/Toronto, (published in co-edition with) Israel Program for Scientific Translation, Jerusalem (distr. by Halsted Press, a division of John Wiley & Sons), 1978.

STATEMENT OF PROBLEM AND NATURE OF RESULTS: *Optimization of discrete processes*: Maximum of product. Some applied problems. Optimal control of discrete objects. Other statements of discrete-control problems. Maximization of several functionals. — *Connection between discrete-optimization problems and other extremum problems*: Extremum of function. Problem of mathematical programming. Controlled processes with continuous time. — *Methods of solving discrete-optimization problems*: Dynamic programming. Discrete maximum principle. Ideas of mathematical programming. — **BASIC CONCEPTS OF MULTIDIMENSIONAL GEOMETRY:** *Vector space*: Definition of vector space. Dimension and basis. Subspace. Homomorphisms of vector spaces. Euclidean vector space. — *Euclidean geometry*: Definition of affine space. Planes in affine space. Affine mappings. Affine functions. Euclidean space. Topology of Euclidean space. Coordinates. — **ELEMENTS OF THEORY OF CONVEX SETS:** *Convex sets*: Definition of convex set. Convex hull. Boundary of convex field. Convex polyhedron. — *Supporting properties of convex sets*: Supporting cone. Affine function on a convex set. — *Theorems on separability of convex cones*: Separation of convex sets. Dual cone. Separability of system of convex cones. — **EXTREMA OF FUNCTIONS:** *Existence theorems*: Tangent mapping. Covering of set. Theorem on intersection. — *Extremum criteria*: Necessary condition for extremum of function. Sufficient condition for extremum of function. Maximum principle. Method of dynamic programming. — **OPTIMALITY CRITERIA FOR DISCRETE PROCESSES:** *Dynamic programming*: Description of method. Connection with theory of extrema of functions. — *Necessary conditions for optimality*: Fundamental problem. Problem with phase con-

straints. Existence theorem. Discrete objects with variable control domain. Discrete maximum principle (method of local sections). — *Sufficient conditions for optimality* : Objects with constant control domain. Objects with variable control domain.

A. F. BEARDON. — **Complex analysis: The argument principle in analysis and topology.** — A Wiley-Interscience publication. — Un vol. relié, 15,5 × 23,5, de XIII, 239 p. — Prix: £14.00. — John Wiley & Sons, Chichester/New York/Brisbane/Toronto, 1979.

ANGLES: Sets. Complex numbers. Upper bounds. Square roots. Distance. Infinite series. Tests for convergence. The Cauchy product. Continuity. Real continuous functions. The exponential function. The trigonometric functions. Periodicity. The hyperbolic functions. The argument of a complex number. Logarithms. Exponents. Continuity of the logarithm. — **BASIC COMPLEX ANALYSIS:** Open and closed sets. Connected sets. Limits. Compact sets. Homeomorphisms. Uniform convergence. Plane curves. The index of a curve. Properties of the index. Polynomials. Power series. Analytic functions. Inequalities. The zeros of analytic functions. Derivatives. Line integrals. Inequalities. Chains and cycles. Evaluation of integrals. Cauchy's theorem. Applications. Conformal mapping. Stereographic projection. Möbius transformations. — **INTERACTIONS WITH PLANE TOPOLOGY:** Simply connected domains. The Riemann mapping theorem. Branches of the argument. The Jordan curve theorem. Conformal mapping of a Jordan domain.

Peter YODZIS. — **Competition for space and the structure of ecological communities.** — Lecture notes in biomathematics, vol. 25. — Un vol. broché, 16,5 × 24, de vi, 191 p. — Prix: DM 21.50. — Springer Verlag, Berlin/Heidelberg/New York, 1978.

Introduction : Competition for space. Spatial competition and the niche. Modelling competition for space. Limitations of this study. Colonization. Preview. — *Founder controlled communities* : Colonization equilibria. Stability. Total standing crop. Summary. — *Dominance controlled communities* : Numerical dominance and functional dominance. The reshuffle. Quasicycles and lotteries. Equilibrium communities. Invasion and succession. Other forms of dispersal. Summary. — *Harvesting* : Harvesting. The reshuffle. Influence of harvesting: theoretical. Species richness: observational. Disturbance. Summary. — *Epilogue* : Spatial competition and the niche reconsidered. Species packing and the relation between plant and animal diversity. Evolutionary considerations and the tropical rain forest. — *Appendix A: Perturbation theory* : Perturbed equilibria. Perturbed stability matrices. Calculation of Λ . — *Appendix B: Some Lotka-Volterra formulae* : One-species equilibria. Two-species equilibria. — *Appendix C: Harvesting and two-species interactions*.

T. W. GAMELIN. — **Uniform algebras and Jensen measures.** — London mathematical Society lecture note series, vol. 32. — Un vol. broché, 15 × 23, de 162 p. — Prix: £6.50. — Cambridge University Press, Cambridge/London/New York/Melbourne, 1978.

Preface. — Choquet theory. — Classes of representing measures. — The algebra $R(K)$. — The Corona problem for Riemann surfaces. — Subharmonicity with respect to a uniform algebra. — Algebras of analytic functions. — The conjugation operation for representing measures. — The conjugation operation for Jensen measures. — Moduli of functions in $H^2(\sigma)$.

Erich MARTENSEN. — **Analysis III: gewöhnliche Differentialgleichungen.** — Für Mathematiker, Physiker, Ingenieure. — B. I.-Hochschultaschenbücher, vol. 834. — Un vol. broché, 12,5 × 19, de v, 209 p. — Prix: DM 8.90. — Bibliographisches Institut-Wissenschaftsverlag, Mannheim/Wien/Zürich, 1971.

Die homogene Schwingungsdifferentialgleichung. — Die spezielle homogene lineare Differentialgleichung. — Das Fundamentalsystem. — Die homogene lineare Differentialgleichung erster Ordnung. — Reduktion der Ordnung. — Der Potenzreihenansatz. — Das Anfangswertproblem für Umgebungen. — Das Anfangswertproblem für einfach zusammenhängende Gebiete. — Die inhomogene lineare Differentialgleichung. — Reell-analytische Probleme. — Die lineare Differentialgleichung erster Ordnung im Reellen. — Die inhomogene Schwingungsdifferentialgleichung. — Zylinderfunktionen und BESSELsche Differentialgleichung. — BESSELsche Funktionen. — Die allgemeine Zylinderfunktion mit nichtnegativ ganzem Index. — Uneigentliche Integrale. — HANKELsche Funktionen-Integraldarstellung und Folgerungen. — Das asymptotische Verhalten der HANKEL-funktionen. — Die HANKELschen Funktionen als Zylinderfunktionen. — EULERsche Relationen und NEUMANNsche Funktionen. — Die LEGENDREsche Differentialgleichung. — Randwertprobleme für Differentialgleichungen zweiter Ordnung. — Systeme von Differentialgleichungen. — Gekoppelte Schwingungen. — Funktionenfolgen und -reihen, gleichmässige Konvergenz. — Gliedweise Integration und Differentiation. — FOURIERsche Reihen. — Das Iterationsverfahren von PICARD-LINDELÖF.

Erich MARTENSEN. — **Analysis V: Funktionalanalysis und Integralgleichungen.** — Für Mathematiker, Physiker, Elektrotechniker. — B. I.-Hochschultaschenbücher, vol. 768. — Un vol. broché, 12,5 × 19, de vi, 273 p. — Prix: DM 9.90. — Bibliographisches Institut-Wissenschaftsverlag, Mannheim/Wien/Zürich, 1972.

Vektorräume. — Dimension, Basis, Komponenten. — Untervektorräume. — Normierte Vektorräume. — Konvergenz in normierten Vektorräumen. Vollständigkeit. — Kompaktheit. — Die Sätze von HAUSDORFF und HEINE-BOREL. — WEIERSTRASSapproximation. — TSCHEBYSCHEFFapproximation. — Funktionen, Operatoren, Funktionale. — Stetigkeit, gleichmässige Stetigkeit, LIPSCHITZstetigkeit. — Vollstetigkeit und Satz von ARZELA-ASCOLI. — Die RIESZsche Theorie für vollstetige lineare Operatoren. — Die FREDHOLMsche Theorie für vollstetige lineare Operatoren. — FREDHOLMsche Integralgleichungen zweiter Art. — Das BANACHsche Fixpunktprinzip. — Die Regula falsi — ein nichtlineares Fixpunktproblem. — Die NEUMANNsche Reihe. Iteration linearer Gleichungssysteme und Integralgleichungen. — VOLTERRA sche Integralgleichungen. — Konvexität. — Das SCHAUDERsche Fixpunktprinzip. — Der Raum der stetigen linearen Funktionen. — Die BANACH-algebra der stetigen linearen Operatoren. — Das Prinzip der Normbeschränktheit. — Fortsetzung stetiger linearer Funktionale. — Der duale Raum. — Schwache Konvergenz. — Der Basisbegriff für unendlichdimensionale Räume. Separabilität. — PraeHILBERT- und HILBERTräume. — Orthogonalfolgen und -reihen.

Franz LOCHER. — **Einführung in die numerische Mathematik.** — Die Mathematik. — Un vol. broché, 13,5 × 21,5, de xv, 265 p. — Prix: DM 43.00. — Wissenschaftliche Buchgesellschaft, Darmstadt, 1978.

FEHLERTHEORIE: Fehlerthéorie. — ITERATIVE VERFAHREN ZUR LOESUNG VON NICHT-LINEAREN GLEICHUNGEN: Das Iterationsverfahren für kontrahierende Abbildungen. Iterative Berechnung von Nullstellen reeller Funktionen. — POLYNOMF: Polynomnull-

stellen und Polynomauswertung. Numerische Verfahren zur Berechnung von Polynomnullstellen. — ITERATIVE VERFAHREN ZUR LÖSUNG LINEARER GLEICHUNGSSYSTEME: Normen. Iterative Methoden zur Lösung von Gleichungssystemen. — ELIMINATIONSVERFAHREN BEI LINEAREN GLEICHUNGSSYSTEMEN UND FEHLERANALYSE: Eliminationsverfahren zur Lösung linearer Gleichungssysteme. Fehleranalyse. — EIGENWERTPROBLEME BEI MATRIZEN: Das Verfahren von Givens-Householder für Hermitesche Matrizen. Die Iterationsverfahren nach V. Mises und Wielandt. — INTERPOLATION: Interpolation von Daten. Interpolation von Funktionen und Interpolationsfehler. — NUMERISCHE INTEGRATION: Elementare Quadraturformeln. Monosplines und Quadraturformeln. Interpolatorische Quadraturformeln. Gauss-Quadraturformeln. Das Romberg-Verfahren. — KONVERGENZ UND DIVERGENZ VON FOLGEN LINEARER OPERATOREN: Die Approximationssätze von Weierstrass, Bernstein und Korovkin. Konvergenz und Divergenz von Interpolations- und Quadraturverfahren. — APPROXIMATION: Approximation in Prä-Hilbert-Räumen. Fourier- und Cebyšev-Approximationen.

Kenneth A. BOWEN. — **Model theory for modal logic:** Kripke models for modal predicate calculi. — Synthese library, vol. 127. — Un vol. broché, 16 × 23, de x, 127 p. — Prix: Dfl. 50.00. — D. Reidel, Dordrecht/Boston/London, 1979.

Syntactic considerations. — Modal structures and morphisms. — Validity. — Completeness. — Löwenheim-Skolem theorems. — Ultraproducts. — Ultrafilter pairs and elementary embeddings. — Direct limits. — Model extensions. — Inductive theories. — Joint consistency and interpolation. — Model completeness. — Finite forcing. — Forcing and model completions. — Omitting types and a two-cardinal theorem. — Appendix: Semantic tableaux methods.

William C. CHINN, Richard A. DEAN, Theodore N. TRACEWELL. — **Arithmetic and calculators:** how to deal with arithmetic in the calculator age. — Un vol. broché, 17 × 23,5, de VII, 488 p. — Prix: \$11.00. — W. H. Freeman, San Francisco, Ca., 1978.

Getting started on your calculator. — Counting and decimal notation. — Addition and subtraction with numbers in decimal notation. — Multiplication and division of decimal numbers. — Geometric applications. — Negative numbers. — Powers, exponents, and scientific notation. — Rational numbers. — Percent and interest. — Rates, ratios, and similarity. — More about integers. — Roots. — Appendix A: How do you think of numbers? — Appendix B: California-Nevada mileage chart. — Appendix C: Answers to exercises.

C. G. GIBSON. — **Singular points of smooth mappings.** — Research notes in mathematics, vol. 25. — Un vol. broché, 17 × 24,5, de 239 p. — Prix: £8.00. — Pitman publ., London/San Francisco/Melbourne, 1979.

Smooth manifolds and mappings: A preliminary review of some calculus. Smooth manifolds. The differential of a smooth mapping. Vector fields and flows. Germs of smooth mappings. — *Transversality:* The notion of transversality. The basic transversality lemma. An elementary transversality theorem. Thom's transversality theorem. First order singularity sets. — *Unfoldings: The finite dimensional model:* Groups acting on sets. — Some geometry of jets. Smooth actions of Lie groups on smooth manifolds. Transversal unfoldings. Versal unfoldings. — *Singular points of smooth functions:* Some

basic geometric ideas. The algebra ε_n . Determinacy of germs. Classification of germs of codimensions $\leqslant 5$. — *Stable singularities of smooth mappings*: The basic ideas. Contact equivalence. Deformations under \mathfrak{R} -equivalence. Classification of stable germs. Higher order singularity sets. Classifying germs under \mathcal{H} -equivalence. Some examples of classifying stable germs. Singular points of stable mappings.

Chris J. S. PETRIE. — **Elongational flows:** aspects of the behaviour of model elasticoviscous fluids. — Research notes in mathematics, vol. 29. — Un vol. broché, 17 × 24,5, de 254 p. — Prix: £9.00. — Pitman Publ., London/San Francisco/Melbourne, 1979.

INTRODUCTION: Historical note. Polymer melts and solutions. — CONSTRUCTIVE EQUATIONS: Incompressible elasticoviscous fluids. Material functions. Basic elongational flows. — EXPERIMENTAL METHODS AND RESULTS: Uniaxial stretching. — Biaxial stretching. Spinning and related flows. — FLOW CLASSIFICATION: Weak and strong flows. Two dimensional flows. Elongational flows. — THEORETICAL ANALYSIS OF STRECHING: Stretching the Jeffreys liquid. Stretching the Maxwell liquid. Review. — THEORY OF SPINNING: The simplified initial value problem. Boundary conditions. Mechanics of Newtonian jets. Stability. — CONCLUDING REMARKS: Converging flow. Nearly extensional flows. Applications.

Collected papers of G. H. HARDY, including joint papers with J. E. Littlewood and others, volume 7. — Ed. by a committee appointed by the London Mathematical Society. — Un vol. relié, 20 × 26,5, de xviii, 897 p. — Prix: £20.00. — Clarendon Press, Oxford, 1979.

Integral equations and integral transforms: Fourier transforms: 28 papers between 1904-1947. Integral equations: 6 papers between 1909 and 1936. — *Miscellaneous papers*: Set theory: 5 papers between 1904 and 1910. Differential equations: 2 papers, from 1912 and from 1939. The Hardy-Weinberg law: 1 paper from 1908. Elementary and expository notes: 7 papers between 1907 and 1945. Addresses, invited lectures, etc.: 11, between 1917 and 1940. — *Questions from "The educational times"*: 44, between 1899 and 1917. — 12 *obituary notices by G. H. Hardy*. — *Book reviews by G. H. Hardy*: 26 reviews from "The Mathematical Gazette", 5 reviews from "Nature", 3 reviews from "The Times Literary Supplement", 1 review from "The Cambridge Review". — *List of other writings*: List of books by G. H. Hardy. — *Obituary notices of G. H. Hardy and other writings concerning his life and work*: List of writings about Hardy. Arrangement of the Volumes. Complete list of Hardy's mathematical papers. Complete list of obituary notices by Hardy.

Probability on Banach spaces. — Edited by James Kuelbs. — Advances in probability and related topics, vol. 4. — Un vol. relié, 16 × 24, de ix, 521 p. — Prix: Sfr. 105.00. — Marcel Dekker, Inc., New York/Basel, 1978.

Alejandro de Acosta, Aloisio Araujo, Evarist Giné: On Poisson measures, Gaussian measures, and the central limit theorem in Banach spaces. — *Alexandra Bellow*: Submartingale characterization of measurable cluster points. — *Naresh C. Jain and Michael B. Marcus*: Continuity of subgaussian processes. — *Ulrich Krengel, Louis Sucheston*: On semiamarts, amarts, and processes with finite value. — *Wojbor A. Woyczyński*: Geometry and martingales in Banach spaces, part 2: independent increments.

Nonlinear analysis and mechanics: Heriot-Watt symposium, vol. 3. — Ed. by R. J. Knops. — Research notes in mathematics, vol. 30. — Un vol. broché, 17,5 × 24, de 173 p. — Prix: £7.50. — Pitman, London/San Francisco/Melbourne, 1979.

M. E. Gurtin and R. C. MacCamy: Population dynamics with age dependence: Classical theories; linear theory with age dependence; nonlinear theory with age dependence.

Proceedings of the international meeting on recent methods in non-linear analysis, Rome, May 8-12, 1978. — Ed. by E. DeGiorgi, E. Magenes, U. Mosco. — Un vol. relié, 18 × 25, de 669 p. — Prix: Lit. 25.000. — Pitagora editrice, Bologna, 1979.

Free boundary problem and some special non linear problems : 8 exposés par C. Baiocchi, L. Caffarelli, A. Damlamian, J. Frehse, A. Friedman, F. Mignot-J. P. Puel, J. Spruch, R. Temam. — *Convergence of functionals and of differential operators ; homogeneization* : 11 exposés par: A. Attouch, L. Boccardo-I. Capuzzo-Dolcetta-M. Matzeu, E. DeGiorgi, J. L. Lions, P. Marcellini, L. Modica, F. Murat, L. C. Piccinini, J. P. Puel, S. Spagnolo, T. Zolezzi. — *Variational and quasi variational inequalities and optimal stochastic control* : 10 exposés par A. Bensoussan, M. Biroli, H. Brezis, P. Charrier, B. Hanouzet-J. L. Joly, M. Langlais, J. M. Lasry-P. Courrège, J. P. Quadrat-P. Colleter-F. Delebecque-F. Falgarone, G. M. Troianiello-M. G. Garroni. — *Related problems of numerical analysis* : 5 exposés par I. Babuska-W. C. Rheinboldt, F. Brezzi, V. Comincioli, E. Rofmán-R. L. Gonzales, F. Scarpini. — “*Round table*” on mathematical models in energy production and management : 5 exposés par C. Ciliberto, A. Ruberti, P. Lederer-F. Falgarone, E. Mariani, G. Quazza.

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Why statistics? — Characteristics of data and how to describe them. — Simple probability. — Three basic laws for attribute data. — Control charts in general. — Control charts for attributes: process control. — Control charts for measurements: process control. — Further topics in control charts and applications. — Acceptance sampling for attributes. — Some standard sampling plans for attributes. — Sampling by variables. — Tolerances for mating parts and assemblies. — Studying relationships between variables by linear correlation and regression. — A few reliability concepts.

Lee J. BAIN. — **Statistical analysis of reliability and lifetesting models: theory and methods.** — Statistics: textbooks and monographs, vol. 24. — Un vol. relié, 16 × 24, de xii, 450 p. — Prix: Sfr. 80.00. — Marcel Dekker, New York/Basel, 1978.

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(without replacement). Two-parameter exponential distribution. Type II censored sampling (with replacement). Two-parameter exponential distribution. Type I censored sampling without replacement. Multiple type II censoring or missing observations. *K*-sample procedures. — *The Weibull distribution*: Maximum likelihood procedures: $X \sim WEI(\theta, \beta)$. Inferences based on simple estimators. Multiple sample problems. Three-parameter Weibull distribution. Analysis for the Weibull process. — *The gamma distribution*: Properties of the gamma distribution. Point estimation. Asymptotic results. Inferences on κ . Inferences on θ, κ unknown. — *Extreme-value distributions*: Distributional results. Applications. — *The logistic and other distributions*: Logistic distributions. Cauchy distribution. Normal distribution. Polynomial HF models. Generalized gamma distribution. — *Goodness-of-fit tests*: Probability plots and least squares fitting. Chi-square goodness-of-fit. Cramer-Von Mises test for completely specified H_0 . Likelihood-ratio-type tests.

Warren PAGE. — **Topological uniform structures**. — Pure and applied mathematics, a Wiley-Interscience series of texts, monographs and tracts. — Un vol. relié, 16 × 24, de xv, 398 p. — Prix: £24.50. — John Wiley, New York/Chichester/Brisbane/Toronto, 1978.

Uniform spaces: Entourage uniformities. Covering uniformities. Projective and inductive limits. Uniformities and gages. Total boundedness. Completeness. Function spaces. — *Topological groups*: Topological groups are uniformizable. Projective and inductive limits. Open mappings and closed graph theorems. Unitary representations and character groups. Haar measure and integration. — *Topological vector spaces*: TVSp and topological groups. Locally convex TVSp. Projective and inductive limits. Vector-valued measure TVSp. Hahn Banach theorems. Duality theory. Bornological and barrelled spaces. Reflexive and Montel spaces. Full completeness: open mapping and closed graph theorems. — *Topological algebras*: Algebraic preliminaries. Normal and normed*-algebras. TVAs and LMC algebras. Q -algebras. Complete, complex, $LMCT_2$, Q -algebras. — *Abstract harmonic analysis*: The algebra $L_1(G)$. The algebra $M(G)$ and its components. Fourier analysis on LCT_2A groups. — *Appendices*.

J. W. S. CASSELS. — **Rational quadratic forms**. — London mathematical society monographs, vol. 13. — Un vol. relié, 16 × 24, de xvi, 413 p. — Prix: £17.50. — Academic Press, London/New York/San Francisco, 1979.

Introduction. — Quadratic forms over a field. — p -adic numbers. — Quadratic forms over local fields. — Tools from the geometry of numbers. — Quadratic forms over the rationals. — Quadratic forms over integral domains. — Integral p -adic forms. — Integral forms over the rational integers. — The spin and orthogonal groups. — Spinor genera. — The reduction of positive definite quadratic forms. — Automorphs of integral forms. — Composition of binary quadratic forms. — Appendix A: Definite forms. — Appendix B: Analytic methods.

K. R. GOODEARL. — **Von Neumann regular rings**. — Monographs and studies in mathematics, vol. 4. — Un vol. relié, 16 × 24, de xvii, 369 p. — Prix: £22.50. — Pitman, London/San Francisco/Melbourne, 1979.

Regular rings. — Idempotents and projective modules. — Abelian regular rings. Unit-regular rings. — Direct finiteness. — Rings with primitive factors artinian. — Bounded index of nilpotence. — Comparability. — Regular self-injective rings. — Structure theory for regular self-injective rings. — Relative dimension theory for nonsingular

injective modules. — Infinite dimension theory for nonsingular injective modules. — Continuous regular rings. — \aleph_0 -continuous regular rings. — K_o . — Pseudo-rank functions. — Structure of $\mathbf{P}(R)$. — Existence and uniqueness of pseudo-rank functions. — Completions. — Completions with respect to families of pseudo-rank functions. — Completeness versus self-injectivity. — Appendices.

Hiroki TANABE. — **Equations of evolution.** — Monographs and studies in mathematics, vol. 6. — Un vol. relié, 16 × 24, de xii, 260 p. — Prix: £20.00 non-net. — Pitman, London/San Francisco/Melbourne, 1979.

Preliminaries from functional analysis: Banach spaces. Function spaces. Functions with values in a Banach space. — *Dissipative operators and fractional powers of operators*: Dissipative operators. Regularly dissipative operators. Fractional powers of operators. — *Semigroup of linear operators*: Semigroups. Temporally homogeneous equations of evolution. Analytic semigroups. Perturbation of semigroups. Application 1: Initial-value problem of the symmetric hyperbolic system. Application 2: Regularly dissipative operators. Elliptic boundary-value problems. Application 3: Parabolic mixed problems. — *Temporally inhomogeneous equations*: Fundamental solutions of temporally inhomogeneous equations. Admissible subspace with respect to a generator. Stability of a system of generators. Construction of fundamental solutions. Inhomogeneous equations. Application 1: Initial-value problem of the symmetric hyperbolic system. A theorem on fractional powers of positive definite self-adjoint operators. Application 2: Mixed problem of hyperbolic equations. — *Parabolic equations*: Parabolic equations. The case in which the domain of $A(t)$ is independent of t . The case in which the domain of $A(t)$ varies with t . The case in which $A(t)$ is a regularly accretive operator. An alternative proof of a theorem due to J. L. Lions. Behaviours of the solutions as $t \rightarrow \infty$. Regularity of solutions. Supplementary notes. — *Non-linear equations*: Semilinear wave equations. Monotone operators. Various kinds of continuities and pseudomonotone operators. Duality mappings. Existence of solutions of monotone operator equations. Semilinear equations. — *Optimal control*: Formulation of the problem. Distributed observation. Observation of the final state. Time optimal control.

Daniel I. A. COHEN. — **Basic techniques of combinatorial theory.** — Un vol. relié, 17 × 24, de x, 297 p. — Prix: £11.30. — John Wiley and Sons, New York/Santa Barbara/* Chichester/Brisbane/Toronto, 1978.

Introduction: Counting. One-to-one correspondence. Parity. — *Binomial coefficients*: Permutations and combinations. Identities. Applications. Sampling with replacement. — *Generating functions*: Introduction. Fibonacci numbers. More generating functions. Partitions. More recurrence relationships. — *Advanced counting numbers*: Multinomial coefficients. Stirling numbers. Catalan numbers. — *Two fundamental principles*: The Dirichlet pigeonhole principle. Ramsey's theorem. The principle of inclusion-exclusion. — *Permutations*: Cycles. Parity. Conjugacy classes. Orbits. Polya's theorem (special case). Polya's theorem (general case). — *Graphs*: Paths. Trees. Cayley's formula. The enumeration of graphs. Euler's formula. — *Appendix*: Mathematical induction. (Exercices à la fin de chaque chapitre.)