BULLETIN BIBLIOGRAPHIQUE

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one. — *K. Gyory :* Polynomials with given discriminant. — *G. Halász :* Remarks to the talk of Mr. Ruzsa. — *E. Heppner :* On the iteration of multiplicative functions. — *E. Hlawka :* On some concepts, theorems and problems in the theory of uniform distribution. — *K.-H. Indlekofer :* On the distribution of values of additive arithmetical functions. — *M. Jutila :* On large values of Dirichlet polynomials. — *I. Kátai :* A remark on q-additive and q-multiplicative functions. — *S. Knapowski, P. Turán :* On the sign changes of $(\pi (x) - $ lix) I. — *N. Levinson :* On the number of sign changes of $\pi (x) - $ lix. — *H. G. Meijer :* On completely additive functions. — *M. Mendès France :* The depth of a rational number. — *H. L. Montgomery :* Distribution questions concerning a character sum. — *W. Narkiewicz :* Some problems and remarks on arithmetical functions. — *H. Niederreiter :* Some new exponential sums with applications to pseudo-random numbers. — *B. Novák :* Lattice points in high dimensional ellipsoids. — *W. Nöbauer :* Compatible and conservative functions on residue-class rings of the integers. — *J. Pintz :* On the Breuer-Siegel theorem. — *K. Prachar :* Generalisation of a theorem of A. Selberg on primes in short intervals. — *I. Ruzsa :* General multiplicative functions. — *A. Sárközy :* Some remarks concerning irregularities of distribution of sequences of integers in arithmetic progressions I. — *A. Schinzel :* On the number of irreducible factors of a polynomial. — *W. Schwarz, J. Spilker :* Mean values and Ramanujan expansions of almost even arithmetical functions. — *V. T. Sós :* On the discrepancy of the sequence [$n\alpha$ [. — *V. G. Srpindzuk :* On extended Riemann hypothesis. — *W. Stas, K. Wiertelak :* Some estimates connected with the distribution of primes in arithmetical progressions I. — *M. Szalay :* A note on the dimensions of representations of S_n. — *K. Szymiczek :* A structure theorem for Grothendieck group of quadratic forms over a field. — *R. Tijdeman :* Applications of the Gel'fond-Baker method to rational number theory. — *M. Waldschmidt :* Some topics in transcendental number theory. — *E. Wirsing :* Thin essential components. — *S. Znám :* On covering sets of residue classes. — Problems.

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Algebra of sets : Propositional calculus. Sets and operations on sets. Inclusion. Empty set. Laws of union, intersection, and subtraction. Properties of symmetric difference. The set 1, complement. Constituents. Applications of the algebra of sets to topology. Boolean algebras. Lattices. — *Axioms of set theory. Relations. Functions :* Set theoretical formulas. Quantifiers. Axioms of set theory. Some simple consequences of the axioms. Cartesian products. Relations. Equivalence relations. Partitions. Functions. Images and inverse images. Functions consistent with a given equivalence relation. Factor Boolean

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Primzahlzerlegung: Allgemeine Orientierung. Teilbarkeit und Primzahlen. ggT und kgV. Brüche. Der euklidische Algorithmus. Lineare diophantische Gleichungen. — *Kongruenzen:* Kongruenzen und Restklassen. Prime Restklassen. Der chinesische Restsatz. Primitivwurzeln mod *p*. — *Quadratische Reste:* Das Legendre-Symbol. Ein Lemma von Gauss. Quadratische Reziprozität. — *Elementare Primzahlverteilung:* Einige Ungleichungen mit Primzahlen. Weitere Ungleichungen mit Primzahlen. Die Grössenordnung der Funktion π. — *Zahlentheoretische Funktionen:* Einige spezielle zahlentheoretische Funktionen. Möbius-Umkehrung. Die eulersche Summenformel. Mittelwerte einiger arithmetischer Funktionen. Euler-Produkte. K-leere Zahlen. Über den quadratfreien Kern. — *Summen von Quadraten:* Summen von zwei Quadraten. Summen von vier Quadraten. — *Primzahlen in primen Restklassen:* Über endliche abelsche Gruppen. Der Basissatz für endliche abelsche Gruppen. Charaktere endlicher abelscher Gruppen. Restklassencharaktere. Der Primzahlsatz von Dirichlet. Eigentliche Restklassencharaktere. — *Die Siebmethode:* Die Siebmethode nach A. Selberg. Der Satz von Brun und Titchmarsh. Die Zwillingssätze von Brun. Anwendung auf Summen von zwei Quadraten. — *p-adische Zahlen:* Zur Dezimaldarstellung der natürlichen Zahlen. Der Ring der ganzen *g*-adischen Zahlen. Der Körper der *p*-adischen Zahlen. — *Diophantische Approximation:* Farey-Brüche. Die Approximationssätze von Dirichlet und Kronecker. Ford-Kreise. Die pellsche Gleichung. — *Kettenbrüche:* Kettenbrüche allgemein. Natürliche Kettenbrüche. Darstellung reeller Zahlen durch natürliche Kettenbrüche. — *Algebraische und transzendente Zahlen:* Algebraische Zahlen. Transzendente Zahlen. Zu Sätzen von Erdös über *L*-Zahlen. — *Bilinearformen:* Einige Hilfssätze. Zu einem Satz von Frobenius. Ergänzungen. — *Der Primzahlsatz:* Die riemannsche Zetafunktion. Der Primzahlsatz mit Restglied. Die dirichletschen *L*-Funktionen. Der Primzahlsatz für prime Restklassen. — *Das waringsche Problem:* Lösungsanzahlen bilinearer Gleichungen. Nochmals Summen von Quadraten. Nochmals bilineare Gleichungen. Das Hauptlemma. Summen von *k*-ten Potenzen. Die Schnirelmann-Dichte. Lösung des waringschen Problems nach Linnik.

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Introduction: Set. Cardinal numbers. Ordinal numbers. Zermelo's theorem and Zorn's lemma. Topology of Euclidean plane. — *Basic concepts in topological spaces:* Topological space. Open basis and neighborhood basis. Closure. Convergence. Covering. Mapping. Subspace, product space, quotient space and inverse limit space. Connectedness. — *Various topological spaces:* T_1, T_2, regular and completely regular spaces. Normal space and fully normal space. Compact space and paracompact space. Axioms of countability. Metric space. — *Compact spaces and related topics:* Product of compact spaces. Compactification. Compact space and the lattice of continuous functions. Extensions of the concept of compactness. — *Paracompact spaces and related topics:* Fundamental theorem. Further properties of paracompact spaces. Countably paracompact space. Modifications of the concept of paracompactness. Characterization by product spaces. — *Metrizable spaces and related topics:* Metrizability. Imbedding. Union and image of metrizable spaces. Uniform space. Proximity space. P-spaces. — *Topics related to mappings:* Mapping space. Metric space, paracompact space and continuous mapping. Theory of inverse limit space. Theory of selection.

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Einleitung : Ziel der Arbeit. Eigenschaften der verschiedenen Transformationen. Die Winkeltransformation. Die Probittransformation. Die Logittransformation. Die Loglogtransformation. Die Wurzeltransformation. Die logarithmische Transformation. Transformation kleiner Anzahlen. Theoretische Grundlagen. Allgemeine Grundlagen. Ergänzungen zur Berechnung mit Tischrechnern. Nach Poisson verteilte Anzahlen. Gewichte, Spannweiten und Rechenwerte. Winkeltransformation. Probittransformation. Logittransformation. Loglogtransformation. Wurzeltransformation. Logarithmische Transformation. Transformation für kleine Anzahlen. Historische Hinweise und Literaturangaben. — *Einfache lineare Regression ; eine einzige Regressionsgerade :* Theorie. Likelihoodschätzung. Zulässigkeit der gewählten Transformation. Testen von Hypothesen und Streuungszerlegung. Likelihoodschätzung; die Methode der Rechenwerte. Vertrauensgrenzen. Grenzfälle. Beschreibung des Rechenablaufs. Anwendungen. Beispiel aus der Bakteriologie. Beispiel aus der Ornithologie. Beispiel aus der Elektrotechnik. — *Einfache lineare Regression; mehrere Regressionsgeraden :* Theorie. Parallelität und Abstand zweier Regressionsgeraden. Parallelität bei mehreren Regressionsgeraden. Abstände zwischen mehreren Regressionsgeraden. Anwendungen. Beispiel aus der Pathologie. Beispiel einer biologischen Gehaltsbestimmung. Beispiel aus der Epidemiologie. — *Mehrfache Regression; allgemeines lineares Modell :* Theorie. Likelihoodschätzung; allgemeine Formulierung. Testen von Hypothesen. Likelihoodschätzung; die Methode der Rechenwerte. Einfache lineare Regression. Beschreibung des Rechenablaufs. Anwendungen. Beispiel aus der Metallurgie. Beispiel aus der Physiologie. Beispiel aus der Strahlengenetik. — *Einweg- und Mehrwegklassifikation ; Streuungszerlegung :* Einleitung. Theorie. Einwegklassifikation. Zweiwegklassifikation ohne Wiederholung. Zweiwegklassifikation mit Wiederholung. Anwendungen. Beispiel mit Tierzucht. Beispiel aus der medizinischen Genetik. Beispiel aus der Genetik. Beispiel aus der Entomologie. Beispiel aus der Soziologie. Beispiel eines Feldversuchs. Beispiel aus der Schädlingsbekämpfung. Beispiel aus der Ophtalmologie. — *Tafeln :* Winkeltransformation. Verteilung von $\chi 2$. Normalverteilung. Verteilung von F und von t.

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Les polynômes arithmétiques: Nombres périodiques. Polynômes arithmétiques: Propriétés des polynômes arithmétiques. Les polars $\left[\dfrac{P(n)}{d}\right]$ et $\left\|\dfrac{P(n)}{d}\right\|$. Récurrence unitaire d'un polynôme arithmétique. Fraction génératrice d'un polynôme arithmétique. Calcul d'un polar par décomposition unitaire de sa fraction génératrice. Sommation des polynômes arithmétiques. Polynômes arithmétiques à deux variables. — *Polyèdres et réseaux:* Polyèdres homothétiques: Polyèdres homothétiques entiers concrets. Polyèdres homothétiques entiers à k dimensions. Polyèdres homothétiques rationnels. — Polygônes paramétriques. — *La méthode des polyèdres en combinatoire:* Problèmes: Problèmes à domaines homothétiques entiers. Problèmes à domaines homothétiques rationnels. — Systèmes diophantiens linéaires: Systèmes à domaines homothétiques. Systèmes mixtes à domaines homothétiques. Systèmes à deux inconnues linéairement paramétrées. Systèmes à deux paramètres. — *Conclusion.* — *Appendice:* Sur les corps convexes placés dans des réseaux. Sur la sommation des polynômes arithmétiques. Sur la partie polynômiale du compteur d'un système d'Euler. Compléments.

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D. J. A. Welsh. — **Matroid theory.** — London mathematical society monographs, vol. 8. — Un vol. relié, 16 × 24, de xi, 433 p. — Prix: £15.00. — Academic press, London/New York/San Francisco, 1976.

Preliminaries. — Fundamental concepts and examples. — Duality. — Lattice theory and matroids. — Submatroids. — Matroid connection. — Matroids, graphs and planarity. — Transversal theory. — Covering and packing. — The vector representation of matroids. — Binary matroids. — Matroids from fields and groups. — Block designs and matroids. — Menger's theorem and linkings in graphs. — Transversal matroids and related topics. — Polynomials, colouring problems, codes and packings. — Extremal problems. — Maps between matroids and geometric lattices. — Convex polytopes associated with matroids. — Combinatorial optimisation. — Infinite structures.

Transformation groups: proceedings of the conference in the university of Newcastle upon Tyne, August 1976. — Ed. by Czes Kosniowski. London Mathematical society lecture note series, vol. 26. — Un vol. broché, 15 × 23, de VII, 306 p. — Prix: £5.25. — Cambridge university press, Cambridge/London/New York/Melbourne, 1977.

15 exposés par: Herbert Abels, Nguiffo B. Boyom, Robert Delver, Allan L. Edmonds, V. Giambalvo, Stefan Jackowski, Czes Kosniowski, Hsu-Tung Ku and Mei-Chin Ku, Arunas Liulevicius, Gerhard X. Ritter, Gerhard X. Ritter and Bradd E. Clark, Reinhard Schultz, Haruo Suzuki, Per Tomter, Steven H. Weintraub. — (Summaries and surveys): H. Abels, R. D. Anderson, L. Auslander, B. Kolb and R. Tolimieri, M. P. Heble, Soren Illman, Katsuo Kawakubo, M. Kreck, Peter Löffler, Gordon Lukesh, W. J. R. Mitchell.

Alexander ZABRODSKY. — **Hopf spaces.** — North-Holland mathematics studies, vol. 22. — Notas de matematica, vol. 59. — Un vol. broché, 17 × 24, de x, 223 p. — Prix: Dfl. 45.00. — North Holland Publishing Company, Amsterdam/New York/Oxford, 1976.

Notations, conventions and preliminary observations: Spaces and maps. Homotopies. Categories and adjoint maps. Pullbacks, pushouts and Eckmann-Hilton duality. Ω-spectra, ring spectra, generalized cohomology. — *The category of H-spaces:* Basic properties of H-spaces. Some special classes of H-spaces. The structure of [, H-space]. H-deviation and H-homotopy equivalence. Change of H-structures and H-maps. — *Homotopy properties of H-spaces:* H-spaces and fibrations. H-liftings. Postnikov systems. Actions, H-actions and principal fibrations. HA and HC obstructions. Homotopy solvability and homotopy nilpotency. — *The cohomology of H-spaces:* The Hopf algebra $H^*(X, Z_p)$. Some relations between the algebra $H^*(X, Z_p)$ and the coalgebra $H^*(\Omega X, Z_p)$. Browder's Bockstein spectral sequence. High order operations. — *Mod$_p$ theory of H-spaces:* p-equivalence and p-universal spaces. mod p-homotopy. Decomposition of 0-equivalences. A study of H_0 spaces. Mod $\mathbf{P}_1$ H-spaces. The genus of an H-space. Mixing homotopy types. The non-classical H-spaces and other applications. — *Non stable BP resolutions:* Killing homology p-torsion. Wilson's $B(n, p)$'s. The groupe [, $B(n, p)$]. H-maps into $B(n, p)$. Examples: some properties of BU. Non stable BP Adams resolutions. Some simple applications.

J. M. HOWIE. — **An introduction to semigroup theory.** — London mathematical society monographs, vol. 7. — Un vol. relié, 16 × 24, de x, 272 p. — Prix: £9.80. — Academic press, London/New York/San Francisco, 1976.

Introductory ideas: Basic definitions. Monogenic semigroups. Ordered sets, semilattices and lattices. Binary relations; equivalences. Congruences. Free semigroups. Ideals and Rees congruences. Lattices of equivalences and congruences. — *Green's equivalences:* The equivalences of $\mathscr{L}$, $\mathscr{R}$, $\mathscr{H}$, $\mathscr{J}$ and $\mathscr{D}$. The structure of $\mathscr{D}$-classes. Regular $\mathscr{D}$-classes. Regular semigroups. — *0-simple semigroups:* Simple and 0-simple semigroups; principal factors. Rees's theorem. Primitive idempotents. Congruences on completely 0-simple semigroups. The lattice of congruences on a completely 0-simple semigroup. Finite congruence-free semigroups. — *Unions of groups:* Unions of groups. Semilattices of groups. Bands. Free bands. Varieties of bands. — *Inverse semigroups:* The natural order relation on an inverse semigroup. Congruences on inverse semigroups. Fundamental inverse semigroups. Anti-uniform semilattices. Bisimple inverse semigroups. Simple inverse semigroups. Representations of inverse semigroups. — *Orthodox semigroups:* Basic properties of orthodox semigroups. The analogue of the Munn semigroup.

Uniform and anti-uniform bands. The structure of orthodox semigroups. — *Semigroup amalgams:* Free products. Dominions and zigzags. The embedding of amalgams. Inverse semigroup amalgams.

Oeuvres de Paul Lévy, volume 3. — Publ. sous sa direction par Daniel Dugué, avec la collaboration de Paul Deheuvels et Michel Ibéro. — Un vol. relié, 18 × 26, de 620 p., avec portr. — Gauthier-Villars, Paris, 1976.

Partie 1 : Théorie des erreurs, loi des grands nombres, séries aléatoires: 25 articles, dont 23 en français et 2 en italien, publiés dans des publications périodiques entre 1922 et 1967. — *Partie 2 :* Fonctions caractéristiques, lois stables, addition et multiplication des variables aléatoires: 28 articles, 27 en français et 1 en anglais, publiés entre 1952 et 1969.

Ursula H. FUNKE. — **Mathematical models in marketing: a collection of abstracts.** — With a preface by M. Beckmann. — Lecture notes in economics and mathematical systems, vol. 132. — Un vol. broché, 17 × 25, de xx, 514 p. — Prix: DM 39.00. — Springer Verlag, Berlin/Heidelberg/New York, 1976.

Introduction. — *List of models.* — *Consumer behavior models :* Brand choice. Buyer attitude. Other consumer behavior models. — *Models of advertising and sales promotion :* Media selection. Advertising and promotion expenditure. Sales response to advertising and promotion. Other models of advertising and sales promotion. — *Pricing models.* — *Product models :* New product. Product mix. — *Sales forecasting models.* — *Facility location models.* — *Sales force models.* — *Marketing mix models.* — *Miscellaneous models.*

Eduard KOFLER und Günter MENGES. — **Entscheidungen bei unvollständiger Information.** — Lecture notes in economics and mathematical systems, vol. 136. — Un vol. broché, 17 × 25, de xii, 357 p. — Prix: DM 31.00. — Springer Verlag, Berlin/Heidelberg/New York, 1976.

Einführung. — Nutzenaxiomatik und Entscheidungskriterien. — Drei Fundamentalprobleme und ihre Überwindung. — Der Begriff der partiellen Information. — Das Max E-$_{min}$ Prinzip. — Einstufige Entscheidungen. — Mehrstufige Entscheidungen. — Stochastische Programmierung unter *LPI*-Bedingungen.

William J. GILBERT. — **Modern algebra with applications.** — Un vol. relié, 15,5 × 24, de xii, 348 p. — Prix: £17.00. — John Wiley and Sons, New York/London/Sydney/Toronto, 1976.

Introduction : Classical algebra. Modern algebra. Binary operations. Algebraic structures. Extending number systems. — *Boolean algebras :* Algebra of sets. Number of elements in a set. Boolean algebras. Switching circuits. Posets and lattices. Normal forms and simplification of circuits. Transistor gates. Representation theorem. — *Groups :* Groups and symmetries. Subgroups. Cyclic groups and dihedral groups. Morphisms. Permutation groups. Even and odd permutations. Cayley's representation theorem. — *Quotient groups :* Equivalence relations. Cosets and Lagrange's theorem. Normal subgroups and quotient groups. Morphism theorem. Direct products. Groups of low order. Action of a group on a set. — *Symmetry groups in three dimensions :* Translations and

the Euclidean group. Matrix groups. Finite groups in two dimensions. Proper rotations of regular solids. Crystallographic groups. — *Polya-Burnside method of enumeration:* Burnside's theorem. Necklace problems. Coloring polyhedra. Counting switching circuits. — *Monoids and machines:* Monoids and semigroups. Finite-state machines. Quotient monoids and the monoid of a machine. — *Rings and fields:* Rings. Integral domains and fields. Subrings and morphisms of rings. New rings from old. Field of fractions. Convolution fractions. — *Polynomial and Euclidean rings:* Division algorithm. Euclidean algorithm. Unique factorization. Factoring real and complex polynomials. Factoring rational and integral polynomials. Factoring polynomials over finite fields. Linear congruences and the Chinese remainder theorem. — *Quotient rings:* Ideals and quotient rings. Computations in quotient rings. Morphism theorem. Quotient polynomial rings that are fields. — *Field extensions:* Field extensions. Algebraic numbers. Galois fields. Primitive elements. — *Latin squares:* Latin squares. Orthogonal Latin squares. Finite geometries. Magic squares. — *Geometrical constructions:* Constructible numbers. Duplicating the cube. Trisecting an angle. Squaring the circle. Construction regular polygons. A nonconstructible number of degree four. — *Error-correcting codes:* The coding problem. Simple codes. Polynomial representation. Matrix representation. Error correcting and decoding. *BCH* codes.

Yvon GAUTHIER. — **Fondements des mathématiques: introduction à une philosophie constructiviste.** — Un vol. relié, 16 × 24, de 460 p. — Prix: FF 144.00. — Montréal: Presses universitaires de Montréal, 1976.

La problématique des fondements des mathématiques. — *Fondements critiques de la théorie des ensembles et de l'intuitionisme : Fondements critiques de la théorie des ensembles :* La notion d'ensemble. La théorie axiomatique des ensembles. Le principe de réflexion et les axiomes forts d'infinité; cardinaux inaccessibles et mesurables. Consistance relative et indépendance de l'axiome du choix et de l'hypothèse du continu. Critique de la théorie des ensembles. — *Fondements critiques de l'intuitionnisme :* La logique intuitionniste et la notion de suite. Suites irrégulières (ou absolument libres). Suites de choix. Le sujet créateur. Critique de l'intuitionnisme. — *Fondements des mathématiques, logique mathématique et philosophie des mathématiques : La signification fondationnelle de la logique mathématique :* La théorie des modèles. La théorie de la récursion. La théorie des démonstrations. — *La théorie des catégories et la théorie des topoi comme langages fondationnels :* La notion de catégorie. La catégorie des catégories. La notion de topos en géométrie algébrique. La notion de topos logique. Intuitionnisme et théorie des topoi. Critique de la théorie des catégories et de la théorie des topoi. Sources bibliographiques. — *Problèmes fondationnels de la théorie des nombres :* Quelques problèmes de la théorie des nombres (distribution des nombres premiers). La notion d'effini. La notion de stase. Concepts construits ou constructifs et concepts structurés ou structurels. Le dernier théorème de Fermat et l'épistémologie empiriste. Postcript. — *Sur la structure ou la construction du continu :* La tradition constructiviste et le continu. Approche axiomatique du continu constructiviste. Modèles « fluctuants » du continu. — *Logique mathématique et philosophie des mathématiques :* Logique mathématique et logique symbolique. Logique mathématique et fondements des mathématiques. Fondements des mathématiques et philosophie des mathématiques. Appendices. — *Constructivisme et structuralisme dans les fondements des mathématiques :* La question des fondements. Fondements constructivistes et fondements structurels. Fondements structurels de la théorie des ensembles. Fondements constructivistes de l'intuitionnisme. La problématique fondationnelle. — *Phénoménologie et mathématiques :* Le cadre phénoménologique. Les idéalités mathématiques. La problématique logico-mathématique. La théorie de toutes les théories possibles est-elle possible ? — *Le sens philosophique des fondements des mathématiques :* Constructivisme et pratique

mathématique. Constructions, démonstrations et existence mathématique. L'agent linguistique constructeur. L'applicabilité des mathématiques. Philosophie et fondements des mathématiques. Logique, mathématiques et métathéorétique. — *Appendices.*

Hans HERMES. — **Einführung in die mathematische Logik: Klassische Prädikatenlogik.** — Mathematische Leitfäden. — 4. Aufl. — Un vol. broché, 16 × 23, de 206 p. — B. G. Teubner: Stuttgart, 1976.

Einführung: Die Aufgabe der Logik. Beispiele für mathematische Beweise. Der Folgerungsbegriff. Bemerkungen zum Folgerungsbegriff. Logikkalküle. Symbolisierung mathematischer Aussagen: Junktoren und Quantoren. Symbolisierung mathematischer Aussagen: Subjekte, Prädikate und Funktoren. — *Die Sprache der Prädikatenlogik:* Terme und Ausdrücke. Elementare Entscheidbarkeitsfragen. Beweise und Definitionen durch Induktion über den Aufbau der Ausdrücke. Freie und gebundene Variablen. Substitution. — *Semantik der Prädikatenlogik:* Einführung in die Semantik der Sprache der Prädikatenlogik. Definition der wichtigsten semantischen Begriffe. Sätze über die Modellbeziehung. — *Ein Prädikatenkalkül:* Vorbemerkungen zu den Regeln des Prädikatenkalküls. Der Ableitbarkeitsbegriff. Die Regeln des Prädikatenkalküls. Die Korrektheit des Prädikatenklaküls. Ableitbare Regeln. Einige Eigenschaften des Ableitbarkeitsbegriffs. Widerspruchsfreiheit. Die Entscheidbarkeit der aussagenlogischen Ableitbarkeit. — *Der Gödelsche Vollständigkeitssatz:* Verallgemeinerte Substitution. Ausdrucksisomorphismen. Ubersicht über den Beweis für den Vollständigkeitssatz. Der Prozess der Maximalisierung. Abschluss des Vollständigkeitsbeweises. Folgerungen aus dem Vollständigkeitssatz. — *Das Peanosche Axiomensystem:* Sprache und Semantik der Logik der zweiten Stufe. Isomorphe Interpretationen. Kategorizität von Axiomensystemen. Die Charakterisierbarkeit der natürlichen Zahlen in der Sprache der Logik der zweiten Stufe. Die Nichtcharakterisierbarkeit der natürlichen Zahlen in der Sprache der Prädikatenlogik. — *Erweiterungen der Sprache, Normalformen:* Erweiterungen der Sprache der Prädikatenlogik. Abgeleitete Regeln und Ableitbarkeitsbeziehungen mit den Verknüpfungen. Weitere Ableitbarkeitsbeziehungen in Verbindung mit der Generalisierung und Partikularisierung. Konjuktive und alternative Normalform. Pränexe Normalformen. — *Die Sätze von A. Robinson, Craig und Beth:* Einbettungen von Algebren. Subalgebren. Ketten von Algebren. Theorien. Elementare Einbettungen von Algebren. Elementare Subalgebren. Elementare Ketten von Algebren. Drei Lemmata über elementare Einbettungen. Die Sätze von A. Robinson und Craig. Die Definierbarkeitssätze von Beth.

P. JAFFARD. — **Statistique.** — Résumé de cours, exercices, problèmes. Collection « Comprendre et appliquer », vol. 11. — Un vol. broché, 18 × 25, de 46 p. — Prix: FF 30.00. — Masson, Paris/New York/Barcelone/Milan, 1977.

Généralités. Estimation: Généralités sur la statistique. Loi observée. Théorie de l'estimation. Sondages. — *Tests:* Généralités sur les tests. Tests non paramétriques. Le test de χ^2. — *Analyse de la variance et analyse de la régression:* Analyse de la variance: cas d'un seul facteur. Analyse de la variance: cas de deux facteurs. Analyse de la régression. — *Tables statistiques.*

J. GENET. — **Mesure et intégration: théorie élémentaire.** — Cours et exercices résolus. — Un vol. relié, 17 × 25, de 322 p. — Paris: Vuibert, 1976.

Clans et tribus de parties d'un ensemble: Clans. Semi-anneaux. σ-clans et tribus. Tribu engendrée par la topologie dans un espace topologique. Familles monotones. — *Mesures positives:* Généralités. Mesures positives. Mesures extérieures. Mesures com-

plètes. Complétion d'une mesure. Prolongement essentiel d'une mesure. — *Espaces mesurables. Applications et fonctions mesurables :* Espaces mesurables. Applications mesurables. Fonctions numériques mesurables. Terminologie de la théorie des probabilités. — *Intégration (fonctions positives) :* Intégrale supérieure d'une fonction positive. Propriétés de l'intégrale supérieure. Théorèmes de convergence. Retour sur la notion d'intégrale supérieure. — *Intégrale de Lebesgue abstraite. Fonctions intégrables :* Définitions et propriétés. Théorèmes de convergence. Comparaison avec l'intégrale de Riemann. Applications intégrales dépendant d'un paramètre. Un exemple d'application transformée de Fourier d'une fonction d'une variable. Extension au cas des fonctions définies μ-presque partout. — *Espaces de Lebesgue $\mathscr{L}^p$ et LP* $(1 \leqslant p \leqslant +\infty)$: Semi-normes généralisés N_p. Espaces $\mathscr{L}^p$ $(1 \leqslant p < \infty)$. Espaces L^p $(1 \leqslant p \leqslant \infty)$. Espaces $\mathscr{L}^\infty$ et L^∞. Approximation dans L^p. Théorèmes de densité. Séparabilité. Compacité. Dualité. Relations entre les L^p. Espaces d'Orlicz. (Notions sommaires). — *Modes de convergence :* Convergence μ-presque uniforme. Convergence en mesure. Diagrammes résumés. — *Mesures produits. Mesures images. Mesures induites :* Mesures produits. Intégration par rapport à une mesure produit. Mesures images. Mesures induites. — *Mesures réelles ou complexes. Décomposition. Mesures absolument continues :* Théorème de décomposition. Mesures absolument continues. Mesures étrangères. Théorème de Lebesgue-Radon-Nicodym. — *Mesures de Radon :* Espaces $\mathscr{C}_\kappa(X)$ et $\mathscr{C}_c(X)$. Mesures de Radon. Mesures de Radon positives. Théorème de décomposition. Mesures de Radon bornées. Propriétés fondamentales. Notions diverses.

Emil ARTIN et Hel BRAUN. — **Leçons de topologie algébrique.** — Texte rédigé par Armin Thedy et Hel Braun. — Traduit de l'allemand par Jacques Troué. — Un vol. broché, 21 × 28, de 205 p. — Presses de l'Université du Québec, Montréal, 1973.

Groupes d'homologie de complexes de chaînes. — *Espaces ponctuels affines.* — *Simplexes affines et opérateur bord :* Les espaces affines comme espaces topologiques. — *Théorie singulière.* — *Propriétés homotopiques des groupes d'homologie :* Exemple d'une équivalence d'homotopie. Conséquences géométriques du théorème d'homotopie. Application aux graphes. — *Le théorème d'excision :* Calculs affines. Calculs métriques. L'homomorphisme T_q. Le module $Tq(x)$. Remarques sur le cas augmenté. — *Décomposition directe et autres moyens de calcul d'homologie :* Calcul de $H_0(X, A)$. Groupes d'homologie d'un point P. La sphère. Groupes d'homologie des graphes. Degré d'une application $f : S^n \rightarrow S^n$. — *Le produit tensoriel :* Produit tensoriel d'homomorphismes. — *Le foncteur Hom :* R, S-modules. Module des quotients. — *Catégories et foncteurs :* Relation avec la théorie singulière. — *Les foncteurs $(-) \otimes M$ et $Hom(-, M)$ en théorie singulière :* Homologie. Cohomologie. Remarques sur la théorie des fonctions. — *Axiomes pour l'homologie et la cohomologie.* — *La suite de Mayer-Vietoris :* Considérations préliminaires sur les modules. Considérations topologiques. Application à la sphère. Application aux graphes. Application aux surfaces de genre g. — *Les théorèmes de séparation de Jordan-Brouwer :* Application à $\mathbf{R}^n$. — *Complexes sphériques :* Complexes sphériques. Reconnaître qu'un espace séparé compact est un C.S. Produits de complexes sphériques. — *Nombres de Betti. Caractéristique d'Euler.* — *Espaces projectifs complexes et réels :* Groupes d'homologie de l'espace projectif complexe. Groupes d'homologie de l'espace projectif réel. — *Applications de S^n dans S^n. Espaces lenticulaires.* — *Classification des surfaces :* Complexes simplicieux. Classification des surfaces.

W. K. HAYMAN and P. B. KENNEDY. — **Subharmonic functions, vol. 1.** — London mathematical society monographs, vol. 9. — Un vol. relié, 16 × 24, de XVII, 284 p. — Prix : £11.60. — Academic press, London/New York/San Francisco, 1976.

Preliminary results : Basic results from set theory. Various classes of functions. Convex functions. Integration theory and Green's theorem. Harmonic functions. — *Subharmonic functions :* Definition and simple examples. Jensen's inequality. Some further classes of subharmonic functions. The maximum principle. S.h. functions and the Poisson integral. Perron's method and the problem of Dirichlet. Convexity theorems. Subordination. — *Representation theorems :* Measure and integration. Linear functionals. Construction of Lebesgue measure and integrals; (F. Riesz's theorem). Repeated integrals and Fubini's theorem. Statement and proof of Riesz's representation theorem. Harmonic measure. The Green's function and the Poisson-Jensen formula. Harmonic extensions and least harmonic majorants. Nevanlinna theory. Bounded subharmonic functions in R^m. — *Functions subharmonic in space :* The Weierstrass representation theorem. Hadamard's representation theorem. Relations between $T(r)$ and $B(r)$. Relations between $N(r)$ and $T(r)$. Functions of order less than one. Tracts and asymptotic values. — *Capacity and null sets :* Potentials and α-capacity. Conductor potentials and capacity. Polar sets. Capacity and Hausdorff measure. The extended maximum or Phragmén-Lindelöf principle. Polar sets and the problem of Dirichlet. Generalized harmonic extensions and Green's function. Capacitability and strong subadditivity. Sets where s.h. functions become infinite.

Differential geometry and relativity: a volume in honour of André Lichnerowicz on his 60th birthday. — Ed. by M. Cahen and M. Flato. — Mathematical physics and applied mathematics, vol. 3. — Un vol. relié, 16 × 23, de xi, 304 p. — Prix: Dfl. 80.00. — D. Reidel publishing company, Dordrecht/Boston, 1976.

Preface. — R. Couty and A. Revuz: Thirty years of activity in the renovation of mathematical education. — *Part I : Differential geometry :* T. Aubin: The scalar curvature. G. Avérous and S. Kobayashi: On automorphisms of spaces of nonpositive curvature with finite volume. A. Avez: Harmonic functions on groups. M. Berger: Some relations between volume, injectivity radius, and convexity radius in Riemannian manifolds. R. S. Cahn, P. B. Gilkey, and J. A. Wolf: Heat equation, proportionality principle, and volume of fundamental domains. E. Combet and C. Moreno: Some remarks on the fundamental kernels of a pseudo-Riemannian manifold. A. Gray: Geodesic balls in Riemannian product manifolds. S. Halperin and D. Lehmann: Twisted exotism. Y. Kosmann: On Lie transformation groups and the covariance of differential operators. J. Lelong-Ferrand: Geometrical interpretations of scalar curvature and regularity of conformal homeomorphisms. P. Libermann: Pfaffian systems and transverse differential geometry. P. Molino: The curvature class of an almost-complex manifold. Pham Mau Quan: Pseudogroups and linear connections on a Banach fibre bundle. S. A. Robertson: Mobility in categories and metric spaces. T. J. Willmore: The tension field of maps of Riemannian manifolds. — *Part II : Mathematical physics :* F. Bayen: Conformal invariance in physics. L. Bel: Quantum mechanics of predictive Poincaré invariant systems. R. Budic and R. K. Sachs: Scalar time functions: differentiability. Y. Choquet-Bruhat: The problem of constraints in general relativity: solution of the Lichnerowicz equation. Ph. Droz-Vincent: Hamiltonian construction of predictive systems. G.-M. Marle: Symplectic manifolds, dynamical groups, and Hamiltonian mechanics. R. Penrose: Any spacetime has a plane wave as a limit. A. H. Taub: Curvature invariants, characteristic classes, and the Petrov classification of space-times. — Collected works of A. Lichnerowicz.

I. N. HERSTEIN. — **Rings with involution.** — Chicago lectures in mathematics. — Un vol. broché, 14 × 21, de x, 247 p. — Prix: £4.15. — The University of Chicago Press, Chicago/London, 1976.

Ring-theoretic preliminaries: Some formal results. Primitive rings with minimal one-sided ideals. Generalized polynomial identities. Central polynomials. The Amitsur-Levitzki theorem. Centralizers. — *Regularity conditions on skew and symmetric elements:* Osborn's theorem. Positive-definiteness theorems. A skew version of Osborn's theorem. Regular skew elements. Some theorems of Montgomery. — *Commutativity theorems:* Division rings. More on division rings. Rings with periodic skew or symmetric elements. Generalizations and a theorem of Lee. — *Mapping theorems:* Some results of Lynne Small. Theorems of Martindale. — *Polynomial identities.* — *Potpourri:* A unitary version of the Brauer-Cartan-Hua theorem. *-radicality in division rings. K-invariant subrings. Another dichotomy theorem. Relations between R and S or K. Finite generation.

Lattice theory. — Ed. by A. P. Huhn and E. T. Schmidt. — Colloquia mathematica societatis Janos Bolyai, vol. 14. — Un vol. relié, $17,5 \times 24$, de 462 p. — Prix: Dfl. 125.00. — North Holland Publishing Company, Amsterdam/Oxford/New York, 1976.

La conférence a eu lieu à Szeged du 27 au 30 août 1974: *J. Adamek:* The algebraic structure of products and sums in a category. — *H.-J. Bandelt:* On complete distributivity and maximal d-intervals in complete lattices. — *J. Doyen and C. Herrmann:* Projective lines and n-distributivity. — *S. Fajtlowicz and J. Schmidt:* Bézout families, join-congruences, and meet-irreducible ideals. — *T. Hecht and T. Katrinak:* Free double Stone algebras. — *C. Herrmann and A. P. Huhn:* Two notes on n-distributive lattices. — *K. Indermark and W. Reisig:* On recursively definable relations. — *J. Jakubik:* Pairs of lattices with common congruence relations. — *J. Jezek and T. Kepka:* Atoms in the lattice of varieties of distributive groupoids. — *B. Jonsson:* Identities in congruence varieties. — *M. Kolibiar:* Extremal extensions of ordered sets to semilattices. — *S. Maeda:* Independent complements in lattices; Remarks on the problems in the book: "Theory of symmetric lattices". — *P. Mederly:* A characterization of modular pseudocomplemented semilattices. — *R. A. Melter and S. Rudeanu:* Geometry of 3-rings. — *V. V. Pasenkov:* On a duality theorem. — *P. Pudlak and J. Tůma:* Yeast graphs and fermentation of algebraic lattices. — *E. T. Schmidt:* Lattices generated by partial lattices. — *W. Seibert:* On subdirectly irreducible modular lattices of breadth 2. — *M. Sekanina:* Orderings of the system of all sublattices of a distributive lattice. — *L. A. Skornjakov:* Complements in the congruence lattice of a polygon over a commutative monoid. — *O. Steinfeld:* Some remarks on algebraic groupoid-lattices. — *M. Stern:* On AC-lattices in which the ideal of the finite elements is neutral. — *T. Traczyk and W. Karebski:* Post algebras are uniquely chain based lattices. — *H. Werner:* Which partition lattices are congruence lattices? — *R. Wille:* A note on simple lattices.

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