Harold SIMMONS. — **Derivation and computation: taking the Curry-Howard correspondence seriously.** — Cambridge tracts in theoretical computer science, vol. 51. — Un vol. relié, 15,5×23,5, de XXV, 384 p. — ISBN 0-521-77173-0. — Prix: £42.50. — Cambridge University Press, Cambridge, 2000.

Mathematics is about proofs, that is the derivation of correct statements; and calculation, that is the production of results according to well-defined sets of rules. The two notions are intimately related. Proofs can involve calculations, and the algorithm underlying a calculation should be proved correct. The aim of the author is to explore this relationship. The book itself forms an introduction to simple type theory. Starting from the familiar propositional calculus the author develops the central idea of an applied lambda-calculus. This is illustrated by an account of Gödel's T, a system which codifies number-theoretic function hierarchies. Each of the book's fifty-two sections ends with a set of exercises, some two hundred in total.

Analyse combinatoire

John M. HARRIS, Jeffry M. HIRST, Michael J. MOSSINGHOFF. — **Combinatorics and graph theory.** — Undergraduate texts in mathematics. — Un vol. relié, 16×24, de XIII, 225 p. — ISBN 0-387-98736-3. — Prix: DM 69.00. — Springer, New York, 2000.

This book evolved from several courses in combinatorics and graph theory given at Appalachian State University and UCLA. Chapter 1 focuses on finite graph theory, including trees, planarity, coloring, matchings, and Ramsey theory. Chapter 2 studies combinatorics, including the principle of inclusion and exclusion, generating functions, recurrence relations, Pólya theory, the stable marriage problem, and several important classes of numbers. Chapter 3 presents infinite pigeonhole principles, König's lemma, and Ramsey's theorem, and discusses their connections to axiomatic set theory.

Wilfried IMRICH, Sandi KLAVZAR. — **Product graphs: structure and recognition.** — Wiley Interscience series in discrete mathematics optimization. — Un vol. relié, 16×24, de XV, 358 p. — ISBN 0-471-37039-8. — Prix: £54.95. — John Wiley, New York, 2000.

Written by two leading experts, the book compiles and consolidates a wealth of information previously scattered throughout the literature, providing researchers in the field with ready access to numerous recent results as well as several new recognition algorithms and proofs. Coverage includes: the basic algebraic and combinatorial properties of product graphs; hypercubes, median graphs, Hamming graphs, triangle-free graphs, and vertex-transitive graphs; colorings, automorphisms, homomorphisms, domination, and the capacity of products of graphs; sample applications, including novel applications to chemical graph theory; proofs and algorithms presented at varying levels of difficulty; clear connections to other areas of graph theory; figures, exercises, and hundreds of references.

Svante JANSON, Tomasz ŁUCZAK, Andrzej RUCIŃSKI. — **Random graphs.** — Wiley-Interscience series in discrete mathematics and optimization. — Un vol. relié, 16×24, de XI, 333 p. — ISBN 0-471-17541-2. — Prix: £48.50. — John Wiley, New York, 2000.

Written by three highly respected members of the discrete mathematics community, the book incorporates many disparate results from across the literature, including results obtained by the authors and some completely new results. Special features include: a focus on the fundamental theory as well as basic models of random graphs; a detailed description of the phase transition phenomenon; easy-to-apply exponential inequalities for large deviation bounds; an extensive study of the problem of containing small subgraphs; results by Bollobas and others on the

chromatic number of random graphs; the result by Robinson and Wormald on the existence of Hamilton cycles in random regular graphs; a gentle introduction to the zero-one laws; ample exercises, figures, and bibliographic references.

W.D. WALLIS. — **A beginner's guide to graph theory.** — Un vol. relié, 16×24, de XVIII, 230 p. — ISBN 0-8176-4176-9. — Prix: DM 78.00. — Birkhäuser, Boston, 2000.

The work strikes a balance between a theoretical and practical approach, consisting of carefully chosen topics to develop graph-theoretic reasoning for mixed audience. Familiarity with the basic concepts of set theory, a passing acquaintance with matrices and algebra, combined with a little mathematical maturity, are all the background requirements. This gentle introduction to graph theory connects readers to exciting areas beyond pure mathematics and has a distinctly applied flavor.

Théorie des nombres

R.P. BAMBAH, V.C. DUMIR, R.J. HANS-GILL, (Editors). — **Number theory.** — Trends in mathematics. — Un vol. relié, 17×24, de VI, 527 p. — ISBN 3-7643-6529-6. — Prix: SFr. 148.00. — Birkhäuser, Basel, 2000.

This book contains 23 papers on various branches of number theory by leading mathematicians, giving an overview of the developments in their respective fields together with open problems. These will be of interest to mathematicians at various levels. The interested reader will have ready access to meaningful problems and results, which have attracted the attention of some leading number theorists.

Franz HALTER-KOCH, Robert F. TICHY, (Editors). — **Algebraic number theory and Diophantine analysis.** — Proceedings of the International Conference held in Graz, Austria, August 30 to September 5, 1998. — Un vol. relié, 17,5×24,5, de XVII, 534 p. — ISBN 3-11-016304-7. — Prix: DM 368.00. —Walter de Gruyter, Berlin, 2000.

The conference was a satellite conference of the International Congress of Mathematicians held in Berlin in August 1998 and also a continuation of a traditional series of number theory meetings in Central Europe. The conference was open for all branches of number theory. Special emphasis was on algebraic number theory, on Diophantine and algorithmic problems and on Diophantine analysis including Diophantine equations, uniform distribution and discrepancy theory. Plenary lectures were delivered by Jörg Brüdern, Jan-Hendrik Evertse, Ernst-Ulrich Gekeler, Kálmán Györy, Stéphane Louboutin, Wladislaw Narkiewicz, Attila Pethö, Florian Pop, Andrzej Schinzel, René Schoof, Martin Taylor, Rober Tijdeman and Michel Waldschmidt. There was a special session on Diophantine equations, and there were about 70 contributed talks in which almost all branches of number theory were touched.

Haruzo HIDA. — **Modular forms and Galois cohomology.** — Cambridge studies in advanced mathematics, vol. 69. — Un vol. relié, 15,5×23,5, de X, 343 p. — ISBN 0-521-77036-X. — Prix: £42.50. —Cambridge University Press, Cambridge, 2000.

This book provides a comprehensive account of a key theory on which the Taylor-Wiles proof of Fermat's last theorem is based. The book begins with an overview of the theory of automorphic forms on linear algebraic groups and then covers the basic theory and recent results on elliptic modular forms, including a substantial simplification of the proof of Taylor-Wiles by Fujiwara and Diamond. It contains a detailed exposition of the representation theory of profinite groups (including deformation theory), as well as the Euler characteristic formulas of Galois cohomology groups. The final chapter presents a proof of a non-abelian class number formula and includes several new results from the author.