

# Théorie des ensembles

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friendly conversational lecture style. Volume 1 includes formal proof techniques, a section on applications of compactness (including non-standard analysis), a generous dose of computability and its relation to the incompleteness phenomenon, and the first presentation of a complete proof of Gödel's second incompleteness theorem since Hilbert and Bernays' *Grundlagen*. Volume 2 on formal (ZFC) set theory, incorporates a self-contained "chapter 0" on proof techniques so that it is based on formal logic, in the style of Bourbaki. The emphasis on basic techniques will provide the reader with a solid foundation in set theory and provides a context for the presentation of advanced topics such as absoluteness, relative consistency results, two expositions of Gödel's constructible universe, numerous ways of viewing recursion, and a chapter on Cohen forcing.

## *Théorie des ensembles*

F. William LAWVERE, Robert ROSEBRUGH. — **Sets for mathematics.** — Un vol. broché, 18 × 25, de XI, 261 p. — ISBN 0-521-01060-8. — Prix: £ 19.95. — Cambridge University Press, Cambridge, 2003.

Advanced undergraduate or beginning graduate students need a unified foundation for their study of mathematics. For the first time in a text, this book uses categorical algebra to build such a foundation, starting from intuitive descriptions of mathematically and physically common phenomena and advancing to a precise specification of the nature of categories of sets. Set theory as the algebra of mappings is introduced and developed as a unifying basis for advanced mathematical subjects such as algebra, geometry, analysis, and combinatorics. The formal study evolves from general axioms that express universal properties of sums, products, mapping sets, and natural number recursion. The distinctive features of Cantorian abstract sets, as contrasted with the variable and cohesive sets of geometry and analysis, are made explicit and taken as special axioms. Functor categories are introduced to model the variable sets used in geometry and to illustrate the failure of the axiom of choice. An appendix provides an explicit introduction to necessary concepts from logic, and an extensive glossary provides a window to the mathematical landscape.

## *Analyse combinatoire*

Jiří HERMAN, Jaromir ŠIMŠA, Radan KUČERA. — **Counting and configurations: problems in combinatorics, arithmetic, and geometry.** — Translated by Karl Dilcher. — CMS Books in mathematics, vol. 12. — Un vol. relié, 16 × 24, de x, 392 p. — ISBN 0-387-95552-6. — Prix: € 69.95. — Springer, New York, 2003.

This book presents methods of solving problems in three areas of elementary combinatorial mathematics: classical combinatorics, combinatorial arithmetic, and combinatorial geometry. In each topic, brief theoretical discussions are immediately followed by carefully worked-out examples of increasing degrees of difficulty and by exercises that range from routine to rather challenging. Although this book emphasizes some methods that are not usually covered in beginning university courses, it nevertheless teaches techniques and skills that are useful not only in the specific topics covered here. There are approximately 310 examples and 650 exercises.

L. LOVÁSZ, J. PELIKÁN, K. VESZTERGOMBI. — **Discrete mathematics: elementary and beyond.** — Undergraduate texts in mathematics. — Un vol. broché, 15,5 × 23,5, de IX, 290 p. — ISBN 0-387-95585-2. — Prix: € 39.95. — Springer, New York, 2003.

Discrete mathematics is quickly becoming one of the most important areas of mathematical research, with applications to cryptography, linear programming, coding theory, and the theory of