a comprehensive and unified understanding of the differential, integral and geometric calculus of several variables. On reading this book the student will acquire the confidence and techniques necessary to tackle new problems.

James EELLS, Bent FUGLEDE. — **Harmonic maps between Riemannian polyhedra.** — Cambridge tracts in mathematics, vol. 142. — Un vol. relié, 16×24, de XII, 296 p. — ISBN 0-521-77311-3. — Prix: £40.00. — Cambridge University Press, Cambridge, 2001.

Harmonic maps between smooth Riemannian manifolds play a ubiquitous role in differential geometry. This book extends the theory in full detail to harmonic maps between broad classes of singular Riemannian polyhedra, with many examples being given. The analytical foundation is based on existence and regularity results which use the potential theory of Riemannian polyhedral domains viewed as Brelot harmonic spaces and geodesic space targets in the sense of Alexandrov and Busemann. The authors set out much new material on harmonic maps between singular spaces for the first time in book form.

C.G. GIBSON. — **Elementary geometry of differentiable curves: an undergraduate introduction.** — Un vol. broché, 15×23, de XVII, 216 p. — ISBN 0-521-01107-8. — Prix: £16.95. — Cambridge University Press, Cambridge, 2001.

The basic concepts of the book are illustrated by named curves, of historical and scientific significance, leading to the central idea of curvature. The singular viewpoint is represented by a study of contact with lines and circles, illuminating the ideas of cusp, inflexion and vertex. There are two major physical applications. Caustics are discussed via the central concepts of evolute and orthotomic. The final chapters introduce the core material of classical kinematics, developing the geometry of trajectories via the ideas of roulettes and centrodes, and culminating in the inflexion circle and cubic of stationary curvature.

Frédéric HÉLEIN. — **Constant mean curvature surfaces, harmonic maps and integrable systems.** — Lectures in mathematics, ETH Zürich. — Un vol. broché, 17×24, de 122 p. — ISBN 3-7643-6576-5. — Prix: SFr. 38.00. — Birkhäuser, Basel, 2001.

This book intends to give an introduction to harmonic maps between a surface and a symmetric manifold and constant mean curvature surfaces as completely integrable systems. It is among the first textbooks about integrable systems, their interplay with harmonic maps and the use of loop groups, and it presents the theory, for the first time, from the point of view of a differential geometer. The most important results are exposed with complete proofs. Some proofs have been completely rewritten with the objective, in particular, to clarify the relation between finite mean curvature tori, Wente tori and the loop group approach – an aspect largely neglected in the literature.

Topologie générale

Peter A. FIRBY, Cyril F. GARDINER. — **Surface topology.** — 3rd edition. — Horwood Publishing series in mathematics and applications. — Un vol. relié, 17×25, de 242 p. — ISBN 1-898563-77-2. — Prix: £25.00. — Horwood Publishing, Westergate, Chichester, 2001.

The book provides a straightforward treatment of an area particularly important for its richness of applications and variety of interactions with other branches of mathematics, e.g., surface topology, graph theory, group theory, vector field theory, plane Euclidean and non-Euclidean geometry, and knot theory; each topic treated from its beginnings. Significant theory is developed by elementary means, thereby providing understanding and enjoyment of this attractive branch of modern mathematics. — *Contents:* Intuitive ideas. – Plane models of

surfaces. – Surfaces as plane diagrams. – Distinguishing surfaces. – Patterns on surfaces. – Maps and graphs. – Vector fields on surfaces. – Plane tessellation representations of compact surfaces. – Some applications of tessellation representations. – Introducing the fundamental group. – Surfaces with boundaries, with an application to knots. – Graphs and groups, problem exercises, tutorial solutions.

Stephen HUGGETT, David JORDAN. — **A topological aperitif.** — Un vol. broché, 17×24, de VIII, 166 p. — ISBN 1-85233-377-4. — Prix: DM 49.90. — Springer, London, 2001.

This is a book of elementary geometric topology, in which geometry, frequently illustrated, guides calculation. The book starts with a wealth of examples, often subtle, of how to be mathematically certain whether two objects are the same from the point of view of topology. After introducing surfaces, such as the Klein bottle, the book explores the properties of polyhedra drawn on these surfaces. Even in the simplest case, of spherical polyhedra, there are good questions to be asked. More refined tools are developed in a chapter on winding number, and an appendix gives a glimpse of knot theory.

Topologie algébrique

Jaumé AGUADÉ, Carles BROTO, Carles CASACUBERTA, (Editors) — **Cohomological methods in homotopy theory.** — Barcelona Conference on Algebraic Topology, Bellaterra, Spain, June 4-10, 1998. — Progress in mathematics, vol. 196. — Un vol. relié, 16×24, de 415 p. — ISBN 3-7643-6588-9. — Prix: SFr. 148.00. — Birkhäuser, Basel, 2001.

This book contains a collection of articles summarizing the state of knowledge in a large portion of modern homotopy theory. A call for articles was made on the occasion of an emphasis semester organized by the Centre de Recerca Matemàtica in Bellaterra (Barcelona) in 1998. The main topics treated in the book include abstract features of stable and unstable homotopy, homotopical localizations, p-compact groups, H-spaces, classifying spaces for proper actions, cohomology of discrete groups, K-theory and other generalized cohomology theories, configuration spaces, and Lusternik-Schnirelmann category.

Topologie des variétés, analyse globale et analyse des variétés

Isaac CHAVEL. — **Isoperimetric inequalities: differential geometric and analytic perspectives.** — Cambridge tracts in mathematics, vol. 145. — Un vol. relié, 16×23, de XII, 268 p. — ISBN 0-521-80267-9. — Prix: £50.00. — Cambridge University Press, Cambridge, 2001.

This introduction treats the classical isoperimetric inequality in Euclidean space and contrasting rough inequalities in noncompact Riemannian manifolds. The treatment in Euclidean space features a number of proofs of the classical inequality in increasing generality, providing in the process a transition from the methods of classical differential geometry to those of modern geometric measure theory; and the treatment in Riemannian manifolds features discretization techniques and applications to upper bounds of large time heat diffusion in Riemannian manifolds. The result is an introduction to the rich tapestry of ideas in geometry and analysis, a subject that continues to inspire fresh ideas in geometry and analysis to this very day – and beyond.

David N. YETTER. — **Functorial knot theory: categories of tangles, coherence, categorical deformations, and topological invariants.** — Series on knots and everything, vol. 26. — Un vol. relié, 16×23, de 230 p. — ISBN 981-02-4443-6. — Prix: £40.00. — World Scientific, Singapore, 2001.

This book begins with a detailed exposition of the key ideas in the discovery of monoidal categories of tangles as central objects of study in low-dimensional topology. The focus then