



Telegraphic Reviews

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TELEGRAPHIC REVIEWS

Edited by **Arnold Ostebee**

with the assistance of the Mathematics Departments of
Carleton, Macalester, and St. Olaf Colleges

Telegraphic Reviews are designed to alert readers in a timely manner to new books appropriate to mathematics teaching and research. Special codes classify reviews by subject area and appropriate use:

| | | |
|----------------------------------|----------------------------------|------------------------------|
| T : Textbook | P : Professional Reading | 1-4 : Semester |
| C : Computer Software | L : Undergraduate Library | ** : Special Emphasis |
| S : Supplementary Reading | 13 : Grade Level | ?? : Questionable |

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General, S(16-17), L. *Berkeley Problems in Mathematics.* Paulo Ney de Souza, Jorge-Nuno Silva. Problem Books in Math. Springer-Verlag, 1998, xiv + 443 pp, \$59.95. [ISBN 0-387-94934-8] Problems and solutions in real and complex analysis, calculus, differential equations, linear and abstract algebra from 20 years of Berkeley preliminary exams. Good resource for graduate students as well as undergraduates. JD

General, S?(13). *The Most Beautiful Mathematical Formulas.* Lionel Salem, Frédéric Testard, Coralie Salem. Transl: James D. Wuest. Wiley, 1992, xiii + 141 pp, \$24.95. [ISBN 0-471-55276-3] A trove of forty-nine formulas (elementary geometry, algebra, trigonometry, number theory) deplorably hyped-up with phony story problems. LCL

Reference, P. *The Wonderful World of Mathematics: A Critically Annotated List of Children's Books in Mathematics, Second Edition.* Diane Thiessen, Margaret Matthias, Jacquelin Smith. NCTM, 1998, xi + 355 pp, \$17.95 (P).

[ISBN 0-87353-439-5] Includes books published since the 1992 edition (TR, May 1994); omits most out-of-print titles. More than 60% of titles are new. New subsection on quilting. Great resource for parents, teachers, teacher educators. KES

Recreational Mathematics, S, P, L***.** *Dissections: Plane & Fancy.* Greg N. Frederickson. Cambridge Univ Pr, 1997, xi + 310 pp, \$34.95. [ISBN 0-521-57197-9] A beautiful book that entices, entertains, fascinates, and instructs. Collects, organizes, and presents 2000+ years of discovery alongside exciting new contributions. Complete, thorough, fun to read; this will be a classic. Only prerequisite is basic knowledge of high school geometry. LCL

Education, T(15-17), S*, P, L. *Glimpses of Algebra and Geometry.* Gabor Toth. Grad. Texts in Math. Springer-Verlag, 1998, xviii + 308 pp, \$39.95. [ISBN 0-387-98213-2] For a "bridge course" among undergraduate and graduate studies. Focuses on connections and interactions between number theory, classical geometry, and modern algebra. Includes web addresses for additional information, interactive graphics, and animations. LCL

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History, P, L. *Mathematics and Mathematicians: Mathematics in Sweden before 1950.* Lars Gårding. History of Math., V. 13. AMS, 1998, xiii + 288 pp, \$75. [ISBN 0-8128-0612-2] Comprehensive description beginning in the 1700's. Clear exposition of the many mathematical contributions of the Swedes as well as glimpses into their personal lives. Includes a short biography of one of the most influential Swedish mathematicians, Gösta Mittag-Leffler, who founded Acta Mathematica and brought Sonya Kovalevski to Sweden. BH

History, P. *Collected Papers of Paulo Ribenboim, Volumes 1-7.* Paulo Ribenboim. Papers in Pure & Appl. Math., V. 104. Queen's Univ, 1997, [ISBN 0-88911-735-7] set, (P). *Volume 1*, xlvi + 506 pp, [ISBN 0-88911-783-7]; *Volume 2*, ii + 532 pp, [ISBN 0-88911-785-3]; *Volume 3*, ii + 550 pp, [ISBN 0-88911-787-X]; *Volume 4*, ii + 580 pp, [ISBN 0-88911-789-6]; *Volume 5*, ii + 573 pp, [ISBN 0-88911-791-8]; *Volume 6*, xviii + 581 pp, [ISBN 0-88911-793-4]; *Volume 7*, ii + 570 pp. [ISBN 0-88911-795-0]

Logic, C, P. *Consequences of the Axiom of Choice.* Paul Howard, Jean E. Rubin. Math. Surv. & Mono., V. 59. AMS, 1998, vii + 432 pp, \$89, with disk. [ISBN 0-8218-0977-6] Comprehensive list of statements proved using the Axiom of Choice. Includes proofs not readily available in the literature; gives references for others and for relationships between consequences. Describes models of set theory. Accompanying software provides access to information on a single consequence or a pair of consequences. KES

Logic, T(15-16: 2), L. *The Incompleteness Phenomenon: A New Course in Mathematical Logic.* Martin Goldstern, Haim Judah. AK Peters, 1998, xiii + 247 pp, \$39 (P). [ISBN 1-56881-093-8] Paperback edition (TR, October 1996).

Combinatorics, P. *Steiner Minimal Trees.* Dietmar Cieslik. Nonconvex Optimiz. & Its Applic., V. 23. Kluwer Academic, 1998, xi + 319 pp, \$140. [ISBN 0-7923-4983-0] Examines Steiner's Problem (and some of its relatives) in the setting of arbitrary finite-dimensional Banach spaces.

Linear Algebra, T(14), L. *Linear Algebra with Applications, Fifth Edition.* Steven J. Leon. Prentice Hall, 1998, xiv + 491 pp. [ISBN 0-13-849308-1] Follows guidelines of the NSF-sponsored Linear Algebra Curriculum

Study Group. Applications scattered throughout; MATLAB exercises in every chapter. Includes chapter on numerical linear algebra. (Third Edition, TR, February 1991.) JD

Ring Theory, S(15-16), L. *Exercises in Basic Ring Theory.* Grigore Călugăreanu, Peter Hamburg. Texts in the Math. Sci., V. 20. Kluwer Academic, 1998, xiv + 198 pp, \$90. [ISBN 0-7923-4918-0] Problems and solutions. Topics include homomorphisms, division rings, Artinian and Noetherian rings, socle and radical, and polynomial rings. Avoids modules and field theory. JD

Algebra, P. *Recent Progress in Algebra.* Eds: Sang Geun Hahn, Hyo Chul Myung, Efim Zelmanov. Contemp. Math., V. 224. AMS, 1999, ix + 243 pp, \$55 (P). [ISBN 0-8218-0972-5] Selected papers from a 1997 conference at KAIST, Taejon, South Korea.

Calculus, T*(13: 3). *Calculus: Concepts and Contexts.* James Stewart. Brooks/Cole, 1998, xx + 1131 pp, \$102.95. [ISBN 0-534-34330-9] Excellent synthesis of traditional and reform approaches to calculus instruction. Stresses conceptual understanding through geometric, numeric, and algebraic approaches. Retains a modest and appropriate amount of rigor. Frequently uses real data in numerical exercises. Includes several interesting projects. RL

Real Analysis, P, L. *Theory of Differentiation: A Unified Theory of Differentiation Via New Derivate Theorems and New Derivatives.* Krishna M. Garg. Canadian Math. Soc. Ser. of Mono. & Adv. Texts, V. 24. Wiley, 1998, xv + 525 pp, \$125. [ISBN 0-471-25387-1] Comprehensive, detailed account of differentiation of real-valued functions. Includes discussion of outstanding problems. For experts. KS

Differential Equations, P. *Boundary Value Problems and Symplectic Algebra for Ordinary Differential and Quasi-Differential Operators.* W. Norrie Everitt, Lawrence Markus. Math. Surv. & Mono., V. 61. AMS, 1999, xii + 187 pp, \$49. [ISBN 0-8218-1080-4]

Differential Equations, P. *Basic Topological Structures of Ordinary Differential Equations.* V.V. Filippov. Math. & Its Applic., V. 432. Kluwer Academic, 1998, xiv + 516 pp, \$225. [ISBN 0-7923-4951-2]

Dynamical Systems, P. *Dynamical Systems Approach to Turbulence.* Tomas Bohr, et al. Nonlinear Sci. Ser., V. 8. Cambridge Univ Pr, 1998, xx + 350 pp, \$85. [ISBN 0-521-47514-7]

Functional Analysis, T(18), S(16-18), P, L. *An Introduction to Banach Space Theory.* Robert E. Megginson. Grad. Texts in Math., V. 183.

- Springer-Verlag, 1998, xix + 596 pp, \$64.95. [ISBN 0-387-98431-3] First chapter could be called "Introduction to Banach Spaces." Four more chapters: weak and weak* topologies, linear operators, Schauder bases, rotundity and smoothness. Author has paid exceptional attention to detail. Over 450 exercises, lengthy bibliography, historical notes, and citations to original sources. An appendix suggests changes for an undergraduate course. KS
- Functional Analysis, P. Analytic Functionals on the Sphere.** Mitsuo Morimoto. Transl. of Math. Mono., V. 178. AMS, 1998, xi + 160 pp, \$65. [ISBN 0-8218-0585-1]
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- Topology, P. Tame Topology and O-minimal Structures.** Lou van den Dries. London Math. Soc. Lect. Note Ser., V. 248. Cambridge Univ Pr, 1998, x + 180 pp, \$39.95 (P). [ISBN 0-521-59838-9] Self-contained treatment of O-minimal structures from geometric and topological viewpoints. Assumes only basics of algebra, topology, analysis. Of interest to model-theorists, geometers, and topologists. JD
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- Mathematical Statistics, T(16-17). Bayesian Statistics: An Introduction, Second Edition.** Peter M. Lee. Wiley, 1997, xii + 344 pp,

\$39.95 (P). [ISBN 0-471-19481-6] Expands *First Edition* by adding two chapters and increasing the number of exercises considerably. Solutions to exercises available on the web. HS
Statistical Methods, T(16: 1), C. *Statistical Case Studies: A Collaboration Between Academe and Industry*. Roxy Peck, Larry D. Haugh, Arnold Goodman. ASA-SIAM Ser. on Stat. & Appl. Prob. SIAM, 1998, xxxi + 282 pp, \$26 (P), with disks. [ISBN 0-89871-413-3] 20 case studies using data sets from business, industry, or government. Data sets have not been simplified for classroom use. Cases are ordered by level of sophistication; most are at an undergraduate level. No exercises. HS

Statistical Methods, S(16). *An Introduction to Statistical Modelling*. Wojtek J. Krzanowski. Oxford Univ Pr, 1998, x + 252 pp, \$19.99 (P). [ISBN 0-340-69185-9] Reference book with an applied slant. Covers core issues of classical statistical modeling. Focus is on the statistical aspects; only the most essential mathematical justifications are given. HS

Statistical Methods, T(17: 1), P, L. *Nonresponse in Household Interview Surveys*. Robert M. Groves, Mick P. Couper. Ser. in Prob. & Stat. Wiley, 1998, xiii + 344 pp, \$79.75. [ISBN 0-471-18245-1] Discusses statistical impact of nonresponse on survey statistics, survey design features that might affect participation, the nature of interviewer-householder interaction producing the participation, and post-survey adjustments to correct for nonresponse. Assumes an initial undergraduate survey methods course. No exercises. KB

Statistical Methods, T(17-18, 1, 2), P, L. *Regression Analysis of Count Data*. A. Colin Cameron, Pravin K. Trivedi. Econometric Soc. Mono. Cambridge Univ Pr, 1998, xvii + 411 pp, \$64.95; \$24.95 (P). [ISBN 0-521-63201-3; 0-521-63567-5] An integrative survey of literature on count data regressions. Comprehensive and up-to-date. Makes sophisticated methods accessible to practitioners of different backgrounds. Emphasizes issues arising in econometric applications. KB

Statistical Methods, T(17: 1), P. *Applied Categorical Data Analysis*. Chap T. Le. Ser. in Prob. & Stat. Texts & Ref. Sec. Wiley, 1998, xiii + 287 pp, \$64.95 (P). [ISBN 0-471-24060-5] For students and research workers in biomedical fields. Application oriented; mathematics kept to a minimum. Many real-life examples and computer program samples. HS

Statistical Methods, T(13: 1). *Statistical*

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Applications (Quantum Theory), P. *Symmetries in Science X*. Eds: Bruno Gruber, Michael Ramek. Plenum Pr, 1998, ix + 454 pp, \$139.50. [ISBN 0-306-45908-6] Proceedings of a 1997 symposium held at the Collegium Mehrerau in Bregenz, Austria.

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Applications (Systems Theory), T(16-17). *Mathematical Control Theory: Deterministic Finite Dimensional Systems, Second Edition*. Eduardo D. Sontag. Texts in Appl. Math., V. 6. Springer-Verlag, 1998, xvi + 531 pp, \$49.95. [ISBN 0-387-98489-5] New material on nonlinear controllability via Lie-algebraic methods, variational and numerical approaches to nonlinear control, time-optimal control of linear systems, feedback linearization, nonlinear optimal feedback, controllability of neural networks, and controllability of linear systems with bounded controls. (*First Edition*, TR, February 1991.)

Applications, P. *Mathematical Morphology and its Applications to Image and Signal Processing*. Eds: Henk J.A.M. Heijmans, Jos B.T.M. Roerdink. Computat. Imaging & Vision, V. 12. Kluwer Academic, 1998, ix + 442 pp, \$195. [ISBN 0-7923-5133-9] Proceedings of a 1998 symposium held in Amsterdam, The Netherlands. 5 invited and 46 contributed papers in 8 sections: Theory; Topology and Geometry; Shape Analysis and Partial Differential Equations; Connected Operators; Segmentation; Random Models and Statistical Techniques; Algorithms; Applications.

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