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- **T**: Textbook
- **P**: Professional Reading
- **C**: Computer Software
- **S**: Supplementary Reading
- **L**: Undergraduate Library
- **I-4**: Semester
- ****: Special Emphasis
- **13**: Grade Level
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**General, S*(15–16), L**. *Newton's Clock: Chaos in the Solar System.* Ivars Peterson. WH Freeman, 1993, xiii + 317 pp, $22.95. [ISBN 0-7167-2396-4] An inviting history of celestial mechanics from antiquity (e.g., navigational star charts) to present (e.g., chaos vs. stability in the solar system). Informal but informative, learned but readable. PZ


ments considering creating a graduate industrial mathematics program; based on experiences of the Institute for Mathematics and its Applications at the University of Minnesota. SM


enthusiastic treatment of noncommutative and
cuttative algebra. Classical approach (no
tensor products, categories), but includes mod-
tern topics. Nice examples, problems. RM

and Arithmetics. Dieter Jungnickel. Bibli-
ographisches Institut & FA Brockhaus, 1993,
339 pp, DM 78. [ISBN 3-411-16111-6] Ex-

Algebra, P. Computational Algebraic Geom-
etry and Commutative Algebra. EBs: David
Eisenbud, Lorenzo Robbiano. Symp. Mathem-
atica, V. XXXIV. Cambridge Univ Pr, 1993, x
+ 298 pp, $49.95. [ISBN 0-521-44218-4] Pa-
pers from 1991 conference in Cortona on com-
putational aspects of Gröbner bases. Includes
 tutorials, research surveys, open problems. RM

Algebra, T(18: 1, 2). P. Quadratic Algebras,
Clifford Algebras, and Arithmetic Witt Groups.
Alexander J. Hahn. Universitext. Springer-
0-387-94110-X] Main themes: algebras and
forms over a commutative ring, involutions on
algebras, gradings and tensor products, separa-
able algebras. New results on representations of
Clifford algebras, structure of the Arf algebra
and the quadratic Witt group, connections be-
tween the group of quadratic algebras and the
discriminant group. TH

Algebra, T**(18: 1), P*. Hopf Algebras and
Their Actions on Rings. Susan Montgomery.
CBMS Reg. Conf. Ser. in Math., No. 82. AMS,
0738-2] Recent results on algebraic structure
of Hopf algebras, their actions and coactions.
Unifies theories of group, Lie algebra, and
graded algebra actions. Provides an accessible
introduction to quantum groups. TH

Calculus, T(13). Calculus with Analytic Ge-
ometry. Joe Repka. Wm C Brown, 1994, xxii +
a lean book. Similar in coverage and emphasis
 to standard texts of the last 15 years. Readers
may find the pages busy rather than lively: 4-
color displays showing calculator keystrokes;
historical asides; lots of colored graphics; 3-
level problem sets with starred problems; cal-
culator problems; and sometimes a “Point to
Ponder.” AWR

Calculus, P. Differentialrechnung für Funkti-
onen mit mehreren Variablen. Klaus Harbarth,
Thomas Riedrich, Winfried Schirotzek. BG
[ISBN 3-8154-2041-5]

Calculus, P. Integralrechnung für Funktionen
mit mehreren Variablen. Karl-Heinz Körber,
Ernst-Adam Pforr. BG Teubner Leipzig, 1993,

Calculus, T(13: 3, 4). Applied Calculus, Sec-
697-11350-7] Introduction to calculus stressing
applications to business, economics, social
sciences, biology. Many solved examples, re-
alistic applications, historical notes. KB

Calculus, C. Insight: Demonstration Software
for Calculus and Analytic Geometry, Eighth
Addison-Wesley, 1992, iii + 6 pp, (P) with
mostly well done. Good animation, but resolu-
tion is limited; some $\varepsilon$-$\delta$ pictures are hard to
decipher. Many examples prompt user for para-
meter values, allowing experiments. Best used in
careful coordination with classroom work. SM

Calculus, P. Differential- und Integralrech-
nung für Funktionen mit einer Variablen. Ernst-
Adam Pforr, Winfried Schirotzek. BG Teubner
3-8154-2040-7]

Real Analysis, T(18). Measure Theory. J.L.
Doob. Grad. Texts in Math., V. 143. Springer-
Verlag, 1994, xii + 210 pp, $49. [ISBN 0-
387-94055-3] A concise exposition. Mea-
sure spaces and measurable functions, integra-
tion and Hilbert space, measure sequences
and signed measures, functions of bounded
variation and Martingale theory. Probability
notions are kept consistently before reader.
No exercises (except to supply some missing
proofs). AWR

Differential Equations, P. Asymptotic Anal-
ysis: Linear Ordinary Differential Equations.
Mikhail V. Fedoryuk. Transl: Andrew Rod-
Russian original. A comprehensive reference for
asymptotic methods. SK

Differential Equations, T(18), P. Introduction
to Functional Differential Equations. Jack K.
Sci., V. 99. Springer-Verlag, 1993, x + 447 pp,
$49. [ISBN 0-387-94076-6] Lively, thought-
ful introduction. Motivates theory with applica-
tions (historical and recent), and the promise of
a rich mathematical structure. Emphasizes dy-
namics, equations that depend on “past history.”
Well-written; extensive bibliography. MLR

Dynamical Systems, T(15–18: 1), S, L. Frac-
Barnsley. Academic Pr, 1993, xiv + 531 pp,
$49.95. [ISBN 0-12-079061-0] New features


Algebraic Topology, P. Nielsen Theory and Extensions of Knot Theory; (2) advanced topics: (3) recent advances: the Conway, Alexander polynomials, numerical invariants; (3) recent advances: the Conway, Jones, and Kauffman polynomials. TH


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Applications (Physics), S(15–17), P, L. The Philosophy Behind Physics. Thomas Brody. Eds: Luis de la Pena, Peter E. Hodgson. Springer-Verlag, 1993, xii + 355 pp, $59. [ISBN 0-387-55914-0] This masterpiece should be much appreciated by physicists, but of less value to philosophers. Author’s technical expertise is obvious throughout; thought-provoking text is virtually devoid of esoteric philosophical vocabulary, but rich in precise examples, lucid discussion, and analysis. MU


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