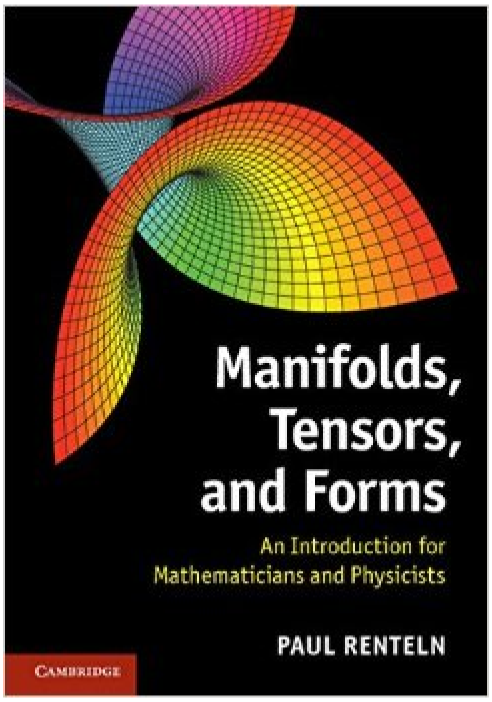
Manifolds, Tensors, And Forms: An Introduction For Mathematicians And Physicists



Synopsis

Providing a succinct yet comprehensive treatment of the essentials of modern differential geometry and topology, this book's clear prose and informal style make it accessible to advanced undergraduate and graduate students in mathematics and the physical sciences. The text covers the basics of multilinear algebra, differentiation and integration on manifolds, Lie groups and Lie algebras, homotopy and de Rham cohomology, homology, vector bundles, Riemannian and pseudo-Riemannian geometry, and degree theory. It also features over 250 detailed exercises, and a variety of applications revealing fundamental connections to classical mechanics, electromagnetism (including circuit theory), general relativity and gauge theory. Solutions to the problems are available for instructors at www.cambridge.org/9781107042193.

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Customer Reviews

On the face of things you might agree with the other reviewers that this covers the same topics as other similar texts... however, to compare this book with another just on the basis of a table of contents is absurd. This book is efficient. The author's definitions and notation are superior to many other texts. The notation and typesetting is modern, crisp, a joy to read. This book is like the text of Flander's in it's ambition to exhibit the power of differential form calculation. But, having spent some time calculating in Flanders, I can assure you this text is far clearer.Here you find the modern concept of an abstract vector space as well as quotient vector spaces used throughout. The linear algebra shown is a good amount, not overly tedious, not overly terse. He gives two proofs of Stokes'

Theorem and clarifies their connection. Both Homology of a smooth manifold and Homotopy are nicely introduced. It’s not meant as a reference on these topics, but, it is quite complete and always with references where proofs are omitted.When he introduces tensors he does so formally, but, without needless digression into universal principles (those can be discussed elsewhere). Then, he follows up by connecting the formal view to that of concrete multilinear maps. Likewise, the wedge product is discussed both from a formal axiomatic perspective, and as it connects to the exterior power of a map. Many similarly ambitious texts have little to offer in their exercise sets. In contrast, Rentlen shines with exercise after exercise which are as lucid as the body of the text. I’m using these to supplement an advanced calculus course I teach this semester.

Manifolds, Tensors, and Forms: An Introduction for Mathematicians and Physicists An Introduction to Tensors and Group Theory for Physicists Tensors, Differential Forms, and Variational Principles (Dover Books on Mathematics) Manifolds and Modular Forms, Vol. E20 (Aspects of Mathematics) Residential Inspector’s Guide to Codes, Forms, & Complaints (Residential Inspector’s Guide to Codes, Forms, and Complaints) Contractor’s legal forms and guides (500 legal forms book series for alllegaldocuments.com 1) Winning Your Personal Injury Claim: With Sample Forms and Worksheets (Self-Help Law Kit With Forms) The Encyclopedia of Real Estate Forms & Agreements: A Complete Kit of Ready-to-Use Checklists, Worksheets, Forms, and Contracts - With Companion CD-ROM How To Create Word Forms With ActiveX Controls (How To Create Forms In Word & Excel 2010) Pharmaceutical Dosage Forms: Tablets, Third Edition (Three-Volume Set): Pharmaceutical Dosage Forms: Tablets, Volume 1, Second Edition Introduction to Vectors and Tensors Volume 1: Linear and Multilinear Algebra (Mathematical Concepts and Methods in Science and Engineering) Mathematical Apocrypha: Stories and Anecdotes of Mathematicians and the Mathematical (Spectrum) STEM Through the Months - Back to School Edition: for Budding Scientists, Engineers, Mathematicians, Makers and Poets Leonhard Euler and the Bernoullis: Mathematicians from Basel Engines of Logic: Mathematicians and the Origin of the Computer Geometric Algebra for Physicists Group Theory in a Nutshell for Physicists Feynman Lectures Simplified 4A: Math for Physicists (Everyone’s Guide to the Feynman Lectures on Physics Book 12) An Introduction to Differentiable Manifolds and Riemannian Geometry, Revised, Volume 120, Second Edition (Pure and Applied Mathematics) Introduction to Smooth Manifolds (Graduate Texts in Mathematics, Vol. 218)