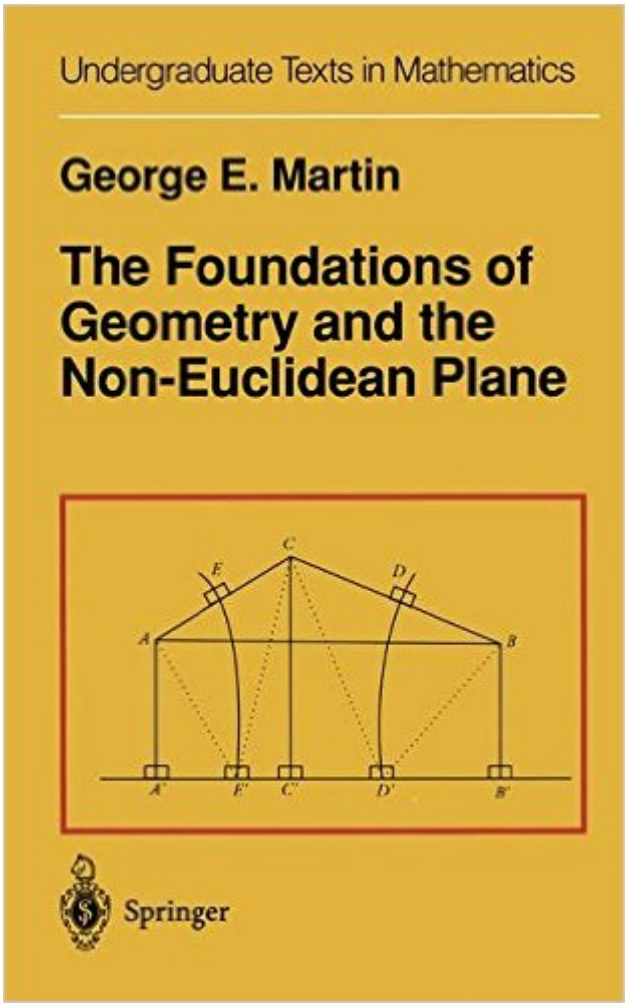
The Foundations Of Geometry And The Non-Euclidean Plane (Undergraduate Texts In Mathematics)



Synopsis

This book is a text for junior, senior, or first-year graduate courses traditionally titled Foundations of Geometry and/or NonÂ- Euclidean Geometry. The first 29 chapters are for a semester or year course on the foundations of geometry. The remaining chapÂ- ters may then be used for either a regular course or independent study courses. Another possibility, which is also especially suited for in-service teachers of high school geometry, is to survey the the fundamentals of absolute geometry (Chapters 1 -20) very quickly and begin earnest study with the theory of parallels and isometries (Chapters 21 -30). The text is self-contained, except that the elementary calculus is assumed for some parts of the material on advanced hyperbolic geometry (Chapters 31 -34). There are over 650 exercises, 30 of which are 10-part true-or-false questions. A rigorous ruler-and-protractor axiomatic development of the Euclidean and hyperbolic planes, including the classification of the isometries of these planes, is balanced by the discussion about this development. Models, such as Taxicab Geometry, are used extenÂ- sively to illustrate theory. Historical aspects and alternatives to the selected axioms are prominent. The classical axiom systems of Euclid and Hilbert are discussed, as are axiom systems for threeÂ- and four-dimensional absolute geometry and Pieri's system based on rigid motions. The text is divided into three parts. The Introduction (Chapters 1 -4) is to be read as quickly as possible and then used for refÂ- erence if necessary.

Book Information

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Customer Reviews

Though perfectly clear to the mathematician, Non-Euclidean geometry is surronded by an aura of

mystery and mistrust among the general public, and even a good many mathematicians would be hard pressed to explain exactly how the negation of the parallel postulate leads to all those strange formulas teeming with hyperbolic functions and other exotica. G.E. Martin explains everything beautifully, with exemplary clarity and just the right amount of detail. The reader also gets a complete construction of Euclidean geometry starting with the Birkhoff-Halsted axiom system, as well as a wealth of historical information into the bargain. Every serious math major or amateur ought to read this book, and many a professional could well benefit from it.