METADATA

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Abstract

The book is addressed to undergraduate students and refers to classical differential geometry of curves and surfaces, i.e., differential geometry "according to Gauss." It is written in such a way that it will be possible to cover a long - term semester course, as long as the instructor emphasizes appropriately various topics. Very briefly, the content of the book is as follows: The curvature and torsion of curves are described, followed by a presentation of the theory of normal surfaces in Euclidean space R^3. Also, the terminology of maps is used in a gentle manner to prepare the reader for modern differential geometry. After that, the shape operator, Gaussian curvature, and the mean curvature of a normal surface are defined. The approach uses basic linear algebra. Moreover, the subtle issue of the commutative derivative and parallelism, as well as geodesic curves, are discussed. Finally, there is a brief presentation on minimal surfaces through change of variables, as well as a presentation of the connection between geometry and topology through the Gauss-Bonnet theorem.

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