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Geometry of Surfaces

By Stillwell, John

Book Condition: New. Publisher/Verlag: Springer, Berlin | The geometry of surfaces is an ideal starting point for learning geometry, for, among other reasons, the theory of surfaces of constant curvature has maximal connectivity with the rest of mathematics. This text provides the student with the knowledge of a geometry of greater scope than the classical geometry taught today, which is no longer an adequate basis for mathematics or physics, both of which are becoming increasingly geometric. It includes exercises and informal discussions. | 1. The Euclidean Plane.- 1.1 Approaches to Euclidean Geometry.- 1.2 Isometries.- 1.3 Rotations and Reflections.- 1.4 The Three Reflections Theorem.- 1.5 Orientation-Reversing Isometries.- 1.6 Distinctive Features of Euclidean Geometry.- 1.7 Discussion.- 2. Euclidean Surfaces.- 2.1 Euclid on Manifolds.- 2.2 The Cylinder.- 2.3 The Twisted Cylinder.- 2.4 The Torus and the Klein Bottle.- 2.5 Quotient Surfaces.- 2.6 A Nondiscontinuous Group.- 2.7 Euclidean Surfaces.- 2.8 Covering a Surface by the Plane.- 2.9 The Covering Isometry Group.- 2.10 Discussion.- 3. The Sphere.- 3.1 The Sphere S^2 in \mathbb{R}^3 .- 3.2 Rotations.- 3.3 Stereographic Projection.- 3.4 Inversion and the Complex Coordinate on the Sphere.- 3.5 Reflections and Rotations as Complex Functions.- 3.6 The Antipodal Map and the Elliptic Plane.- 3.7 Remarks on...



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