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**Harvey, Matthew**

**Geometry illuminated. An illustrated introduction to Euclidean and hyperbolic plane geometry.**

MAA Textbooks. Washington, DC: The Mathematical Association of America (MAA) (ISBN 978-1-93951-211-6/hbk; 978-1-61444-618-7/ebook). xvi, 543 p. (2015).

The goal of this book is a systematic development of Euclidean and hyperbolic geometry. The book concludes four major parts: 1. Neutral geometry (absolute geometry); 2. Euclidean geometry; 3. Euclidean transformations; 4. Hyperbolic geometry. The first part is dedicated to neutral geometry (absolute geometry) that is based on the first four of Euclid's postulates and not on the parallel postulate. Here, the definitions and the properties of the basic geometric conceptions are given: angles and triangles; congruence theorems; polygons; linear and angle measures. The second part considers Euclidean geometry that is distinguished from neutral geometry by one axiom – Euclid's parallel postulate. This part discusses the classical subjects of Euclidean geometry: parallel projection, similarity, circles and circumference, geometrical constructions, concurrence, trilinear coordinates. The third part describes another approach of Euclidean geometry – via geometric transformations. Here is a comprehensive material corresponding to geometric transformation: isometries; reflections; translations and rotations; change of coordinates, dilation, inversion and others subjects. The fourth part is an introduction to hyperbolic geometry that is non-Euclidean neutral geometry. This part looks at several models for hyperbolic geometry. Special attention is dedicated to the Poincaré disk model that satisfies all the axioms of neutral geometry. Unlike the previous parts, this part is less elementary and requires the reader to have certain knowledge of multivariable calculus, linear algebra, and some differential equations. A major advantage of the book are various numerous exercises attached to every chapter. The book is written very clearly and may be useful for students, teachers and researcher in geometry.

*Victor Oxman (Haifa)*

*Classification:* G45 G95

*Keywords:* Euclidean geometry; axioms; triangles; polygons; circles; concurrence; geometric transformations; hyperbolic geometry; pseudosphere; upper half plane; Poincaré disk; hyperbolic trigonometry