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AVVISO DI CONFERENZA

The Hexagon Theorem of Pappus: Opening a Horizon of Possibilities With Unexpected Consequences

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Abstract. This theorem is one that opens, to use a phrase of Gian-Carlo Rota, a horizon of possibilities. I plan to explore a few in a journey that starts with Diophantus in antiquity and continues to the turn to the twentieth century. "Conversations" between mathematicians from the early 1600s to the late 1800s reveal a link between a Diophantine identity and the Pappus hexagon theorem, which led to unexpected connections between algebra and geometry. The 19th century research of K.G.C. von Staudt suggests another path from Girard Desargues in 1648 to Mario Pieri in 1898, which shows an evolution of thought in foundations of projective geometry. I demonstrate how Pieri used simple constructions to prove the equivalence of the hexagon theorem to a statement about separation of points on a line, and talk about a proof he promised to Oswald Veblen that I am trying to reconstruct.