Raven Neese
Summer 2000
Abstract

Methods of Locating the Fermat Point: Algebraically, Analytically, and Synthetically

In Euclidean geometry, central points of a triangle have been extensively investigated and such points are known to exist. One central point was discovered as an answer to the following problem posed by Pierre de Fermat (1601-1665): Given triangle ABC, find the point X, such that the sum of its distances from the three vertices is a minimum. The first solution of this problem is attributed to Evangelista Torricelli (1608-1647). The point is called the Fermat point and is sometimes referred to as the Fermat-Torricelli point or the first isogonic center of a triangle.

The Fermat point is located synthetically and analytically, using traditional compass and straightedge techniques and using the modern techniques of *The Geometer's Sketchpad*. Each method of locating Fermat's point is compared and contrasted.