

Feuerbach, Karl Wilhelm | Encyclopedia.com

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(*b.* Jena, Germany, 30 May 1800; *d.* Erlangen, Germany, 12 March 1834)

mathematics.

Karl Wilhelm was the third of the eleven children of Eva Wilhelmine Maria Troster and the famed German jurist Paul Johann Anselm Feuerbach. By the age of twenty-two, the gifted young mathematician had been awarded the Ph.D., had made a significant contribution to a pleasant and active branch of mathematical research, and had been named professor of mathematics at the Gymnasium at Erlangen.

Feuerbach's scientific output was small, and his fame as a mathematician rests entirely upon three publications, which constitute the total output of his scientific career. His most important contribution was a theorem in Euclidean geometry, the theorem of Feuerbach:

The circle which passes through the feet of the altitudes of a triangle touches all four of the circles which are tangent to the three sides of the triangle; it is internally tangent to the inscribed circle and externally tangent to each of the circles which touch the sides of the triangle externally [*Eigenschaften*]

In this statement one recognizes the nine-point circle of a triangle, which had been fully described though not named by Brianchon and Poncelet in 1821. The proof of this theorem was presented with a number of other conclusions on the geometry of the triangle in his small book *Eigenschaften einiger merkwürdigen Punkte...*, published in 1822. In this work Feuerbach developed a number of algebraic identities involving the lengths of the sides and other parts of a triangle and then proved that the two circles in question were tangent by showing that the distance between their centers was equal to the sum of their radii. He used as a model for this investigation Euler's "Solutio facilis problematum," a paper that had been published in 1765. Recognition came slowly, but many years after his death a number of papers appeared devoted to a discussion of the nine-point circle of a triangle and the theorem of Feuerbach.

In 1827 Feuerbach brought out the results of his second investigation. After an exhaustive analysis of this work, Moritz Cantor concluded that Feuerbach had proved to be an independent co-discoverer with Moebius of the theory of the homogeneous coordinates of a point in space. In the meantime, however, Feuerbach's teaching career was beset by difficulties and his health had become seriously impaired. At the age of twenty-eight he retired permanently and spent the rest of his life in Erlangen as a recluse.

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Laura Guggenbuhl