Albert Girard Encyclopedia Article

Albert Girard

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Albert Girard

1595-1632

French Mathematician

A mathematician who contributed to a number of areas ranging from arithmetic to algebra, Albert Girard enjoyed little recognition during his lifetime. A 1626 treatise on trigonometry by him contains the first use of the abbreviations *sin,cos,* and *tan,* and he was also perhaps the first mathematician to offer a formula for the area of a triangle inscribed on a sphere.

Girard was born in 1595 in St. Mihiel, France, but he was destined to spend most of his life away from his homeland. The reason for this was that as a member of the Reformed Church, he found himself ostracized in stridently Catholic France. He therefore moved to the Netherlands, where he studied under Willebrord Snell (1580-1626) at the University of Leiden, and later he went to work for Prince Frederick Henry of Nassau. Yet just as the French did not consider him fully one of their own because of his religion, he was not Dutch either, and he never succeeded in securing the patronage so necessary to the career of a mathematician in the seventeenth century. On the other hand, he was able to supplement his income in an unusual way, as a professional lute-player.

In his writings on geometry, Girard identified multiple types of quadrilaterals and pentagons, defined 69 of 70 types of hexagons, and became the first mathematician to state that the area of a spherical triangle is proportional to its spherical excess. He became the first to establish the definition $f_{n+2} = f_{n+1} + f_n$ for the Fibonacci sequence, and improved on the work of Rafaello Bombelli (1526-1573) for extracting the cube roots of binomials. In addition, Girard developed a simplified means for demarking the cube root still in use today.

Also a widely published translator, Girard was responsible for translating a number of works from French into Flemish, the language of Holland, and from Flemish into French. Many of these concerned military applications of mathematics, or specifically fortifications, and it is likely that he served in the Dutch army as an engineer—yet another way he managed to support himself. Poor, obscure, and just 37 years of age, Girard died in Leiden on December 6, 1632. Were it not for an explanation of his circumstances included in an edition of works by Simon Stevin (1548-1620) which he translated, historians would know almost nothing about his life.