

Topic	Historical Anecdotes
Sub Topic	Text Book Notes – Gauss
Summary	A brief history on Gauss
Authors	Aaron Kline
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Johan Friedrich Carl Gauss was born on April 30, 1777, outside of Brunswick, Germany. He was the only child of his parents and had a brother a few years older than him from his father's earlier marriage.

Gauss faced many challenges in his youth being born in a poor and uneducated family. His father worked many stressful and unprofitable jobs, and was always striving to meet the family's basic needs. Sometime between the ages of three and four, all the contributions that Gauss made almost never happened. Young Gauss almost drowned in a nearby canal.

A few years after acquiring a house within the city limits, Gauss's world would be turned upside down. It was the French Revolution; the armies of France overtook Brunswick. Because of the war, the 1780s were a surreal time for Gauss; the thought of ever being successful seemed to be an unrealistic dream.

In 1784, despite the war, Gauss was able to start elementary school. He already possessed the ability to read and write and perform elementary math, and that too without the help of his parents. It was apparent that even at this early age, Gauss had the makings of a genius.

In 1788, Gauss left his parents after being admitted to secondary school, however the effects of the war limited the teaching abilities of the school. Still Gauss took full advantage of the school and the skills he learned proved useful in his future success.

From 1792-1795 Gauss attended school at the Collegium Carolinum, a new science-oriented academy. During his time his arithmetic genius increasingly became ever more apparent. As an example, he once found the square root in two different ways

up to fifty decimal places by expansions and interpolations. He also formulated the principle of least squares, while searching for regularity in the distribution of prime numbers.

Gauss entered the University of Göttingen in 1795. While there he made many discoveries, most of which had already been discovered. Discouraged with mathematics and his lack of making any true discover, Gauss was on his way to becoming a philologist. That is until he made a discovery that declared him a mathematician. Gauss obtained conditions for constructibility of regular polygons and was able to announce that the regular 17-gon was constructible by ruler and compasses. It had been a millennium since any advancement had been made in this matter.

Between 1796-1800, Gauss's mathematical thinking matured tremendously. Mathematical ideas came to him so easily and frequently that he had trouble getting them all down on paper. In 1798, Gauss returned to Brunswick, where he lived alone and continued his intensive work.

In January 1801, an astronomer had briefly observed that the new planet named Ceres could not be located. During the rest of that year, astronomers tried with no luck to relocate it. In September of the same year, Gauss decided to take up the challenge. He applied both a more accurate orbit theory (based on an ellipse rather than the usual circular method) and improved numerical methods (based on least squares). By December, Ceres was soon found. This was regarded as an amazing feat, due the lack of information and the vast distance of the planet, especially since Gauss did not reveal his methods.

Many of Gauss's discoveries were not credited to Gauss. Gauss had high standards for his own work and would not publish his findings without extensive proofs. When he published his discovery of least squares, he was accused of stealing the idea. This was because between the time of his discovery and his publication, another mathematician had stumbled on the idea. Gauss never said that he had been using the method for some time.

On February 23, 1855 Gauss died in his sleep. He was 88. Gauss made tremendous contributions to many fields of math, science and astronomy. After his death, Gauss's notebook and unpublished works included work that would have taken scientists decades of work.

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