

EMMY NOETHER

23 March 1882~14 April 1935



EARLY LIFE

Emmy Noether was born on 1882 in Erlangen, Bavaria. She was daughter of Max Noether, a mathematician, and Ida Amalia Kaufman. Her parents are both from Jewish merchant families. She was the oldest of four siblings, she had three little brothers, Alfred Noether, Fritz Noether, Gustav Robert Noether.

FUN FACTS

She directly helped Albert Einstein, particularly in understanding his theory of general relativity. Einstein even called her "the most significant creative mathematical genius thus far produced since the higher education of women began."

ADVERSITY

systemic sexism

She faced several difficulties while earning degrees and getting a paid position. Noether had to receive special permission from professors to attend classes. In 1907, after she got her doctorate, she was still unable to have an official title. She even worked for 16 years at the University of Göttingen without pay or a title, and sometimes her classes were even under another male professor's name

political persecution

She was one of the first professors fired from Göttingen in 1933 when the Nazi regime came to power because she was a Jewish and politically liberal individual.

She fled to the United States after she was forced to leave Germany. She got temporary positions at Bryn Mawr College and the Institute for Advanced Study.

EDUCATION

- High school (1900): Municipal School for Higher Education of Daughters in Erlangen; learned and certified on how to teach English and French.
- University (1900): She began auditing math classes at the University of Erlangen--where her father teaches as a professor-- as one of only two women in the university.
- Earning a doctorate (1903): Passed the necessary exams to be a doctoral student.
- Earning a doctorate (1907): Granted her doctorate in mathematics and continued to teach there under her father's name.
- University of Göttingen (1915-1922): Invited to join the faculty. Then, in 1922, appointed an associate professor without tenure.
- Emigration to the United States (1933): accepted a position at Bryn Mawr College in Pennsylvania after being forced out of Germany.

CONTRIBUTIONS

Abstract algebra

She helped transform algebra into the study of structures and relationships. Before her, algebra was mostly about solving equations, but after that, algebra became about understanding patterns, such as how groups, rings, and fields behave in general.

Noetherian rings

A Noetherian ring is a ring where things eventually stop getting more complicated when you build bigger structures. It prevents infinite chains from happening. It is crucial because it shows up in many other theorems, like Hilbert's basis theorem.