

OUTSTANDING RUSSIAN PERSON

SOFIA KOVALEVSKAYA



Mathematician who made noteworthy contributions to **analysis**, **partial differential equations** and **mechanics**

BIOGRAPHY

Sofia Kovalevskaya was born in **Moscow**, the second of three children. Sofia's parents provided her with a good early education. At various times, her governesses were native speakers of English, French, and German. When she was 8 or 9 years old, she was intrigued by a foretaste of what she was to learn later in her lessons in calculus. She was tutored privately in elementary mathematics by Iosif Ignatevich Malevich.

The physicist **Nikolai Nikanorovich Tyrtov** noted her unusual aptitude when she managed to understand his textbook by discovering for herself an approximate construction of trigonometric functions which she had not yet encountered in her studies. Tyrtov called her a "**new Pascal**".



BIOGRAPHY: STUDENT YEARS



Through great efforts, Sofia obtained permission to audit classes with the professors' approval at the [University of Heidelberg](#). There she attended courses in physics and mathematics under such teachers as [Hermann von Helmholtz](#), [Gustav Kirchhoff](#) and [Robert Bunsen](#).

In [October 1869](#), shortly after attending courses in Heidelberg, she visited [London](#). There, at age nineteen, she met Herbert Spencer and was led into a debate, at Eliot's instigation, on "[woman's capacity for abstract thought](#)".

In October 1870, Sofia moved to Berlin, where she began to take private lessons with Karl Weierstrass, since the university would not allow her even to audit classes. He was very impressed with her mathematical skills, and over the subsequent three years taught her the same material that comprised his lectures at the university.

In 1874 she presented three papers — on [partial differential equations](#), on the [dynamics of Saturn's rings](#), and on [elliptic integrals](#) — to the University of Göttingen as her doctoral dissertation. With the support of Weierstrass, this earned her a doctorate in mathematics.

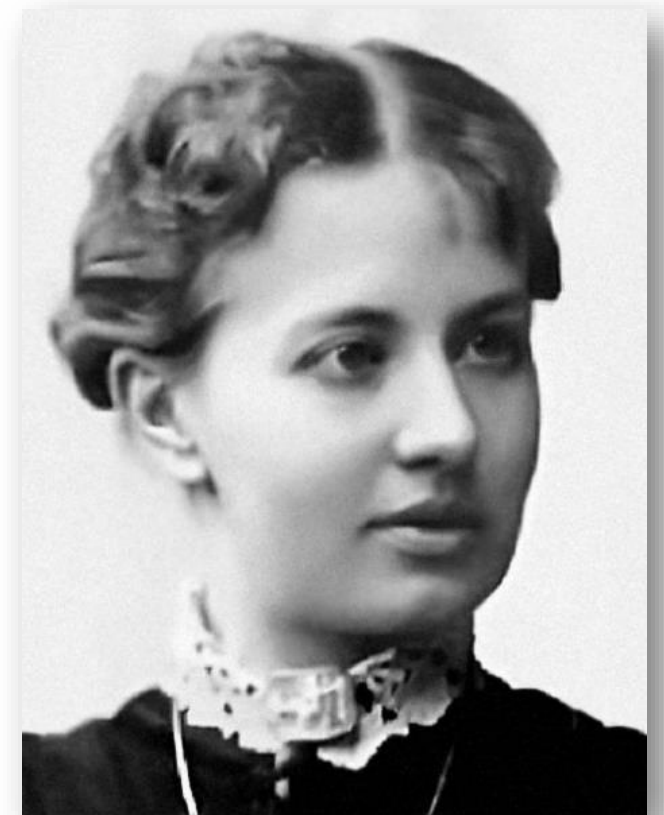
BIOGRAPHY: LAST YEARS IN GERMANY AND SWEDEN AND HER ACHIEVEMENTS

With the help of the mathematician **Gösta Mittag-Leffler**, whom she had known as a fellow student of Weierstrass, Kovalevskaya was able to secure a position as a **privat-docent** at Stockholm University in Sweden.

In 1884 Kovalevskaya was appointed to a five-year position as **Extraordinary Professor**. In 1888 she won the Prix Bordin of the French Academy of Science.

In 1889 Kovalevskaya was appointed **Ordinary Professor** (full professor) at Stockholm University, the **first woman in Europe in modern times to hold such a position**.

Kovalevskaya died of **influenza** complicated by pneumonia in 1891 at age forty-one.



PERSONAL LIFE



Vladimir and Sofia Kovalevskij

At that time, women were **not allowed** to attend universities in Russia and most other countries. In order to study abroad, Sofia needed written permission from her father (or husband). Accordingly, in 1868 she contracted a "fictitious marriage" with **Vladimir Kovalevskij**.

He was a young **paleontology** student, book publisher and radical, who was the first to translate and publish the works of Charles Darwin in Russia. They moved from Russia to Germany in 1869, after a brief stay in Vienna, in order to pursue advanced studies.

LITERARY ACTIVITY

She wrote a number of literary works, including several big ones.

In Russian:

- «Memories about George Elliott»
- family chronicle «Memories from childhood»
- «Three days at a peasant university in Sweden»
- posthumous poem «European Herald»

In Swedish:

- novel «The Family of Vorontsovs»



INTERESTING FACTS



Kovalevskaya believed in destiny and its signs, considering that she inherited the gift of foresight from one of her great-grandmothers, a fortune-teller.

Kovalevskaya's grandfather and great-grandfather were famous scientists. Obviously, the abilities to exact sciences were in her DNA.

IN FICTION:

- "Little Sparrow": A Portrait of Sophia Kovalevsky" (1983), Don H. Kennedy
- "Beyond the Limit: The Dream of Sofya Kovalevskaya" (2002), a biographical novel by mathematician and educator Joan Spicci
- Against the Day, a 2006 novel by Thomas Pynchon was speculated before release to be based on the life of Sofia
- "Too Much Happiness" (2009), short story by Alice Munro, published in the August 2009



SOFIA KOVALEVSKAYA IN WORLD'S CULTURE

IN FILM:

- Sofia Kovalevskaya has been the subject of three film and TV biographies.
- «Sofya Kovalevskaya» (1956) directed by Iosef Shapiro, starring Yelena Yunger, Lev Kosolov and Tatyana Sezenyevskaya.[19]
- «Sofya Kovalevskaya» (1985 TV) directed by Azerbaijani director Ayan Shakhmaliyeva, starring Yelena Safonova as Sofia.

THANK YOU FOR ATTENTION!