Sofja Wassiljewna Kowalewskaja

Also known as: Sophia Korvin-Krukovsky

15 January 1850 - 10 February 1891

1 Introduction

As a child, her bedroom was wallpapered with her Father's mathematics notes from his student days being lectured by Ostrogradsky, which intrigued her. She was fortunate enough to be tutored in elementary maths as a child and went on to get tutoring in calculus from Strannoliubskii, a well—known advocate of higher education for women. As a woman, she could not complete her education in Russia, and in 1868, she contracted a "fictitious marriage" with Vladimir Kovalevskij, so they could go to Vienna, where she studied physics while he studied palaeontology. Son

The couple moved to St Petersburg for several months, studying various subjects and later moving to the University of Heidelberg. There she attended courses in physics under such teachers as Hermann von Helmholtz, Gustav Kirchhoff and Robert Bunsen and studied mathematics with Leo Königsberger and Professor Paul du Bois-Reymond, who were students of Weierstrass. Paul du Bois-Reymond is recognised as one of the first to this is the importance of the Cauchy convergence criterion in his 1882 work.

In 1869 at the nineteen on a trip to London for Vladimir to see his acquaintances Charles Darwin and Thomas Huxley she was invited to attend George Eliot's Sunday salons where she met Herbert Spencer which led into a debate, at Eliot's instigation, on "woman's capacity for abstract thought". The debate may have inspired passage "In short, woman was a problem which, since Mr. Brooke's mind felt blank before it, could hardly be less complicated than the revolutions of an irregular solid." as Eliot was writing Middlemarch at the time.

In October 1870, Kovalevskaya moved to Berlin, where she began private lessons with Karl Weierstrass, his willingness to do so may have been due to her grandfather, who immigrated from Germany to Russia as the astronomer and geographer who he cited in one of his papers. Weierstrass was often cited as the "father of modern analysis"; he was a mathematical heavyweight; regardless of leaving university without a degree, because his studies were to be in the fields of law, economics, and finance, he was immediately in conflict with his hopes to study mathematics, he went on to train as a teacher in Münster, during this period of study, Weierstrass attended the lectures of Christoph Gudermann.

Weierstrass went on to teach mathematics, botany, physics and gymnastics. At the age of thirty-five, while suffering from a long illness, he produced mathematical publications gaining him an honorary doctorate from the University of Königsberg . Weierstrass's contributions include formalising the continuity of a function and complex analysis, proving the intermediate value theorem and the Bolzano–Weierstrass theorem.

Sofia Kovalevsky met Weierstrass n 1870, he tutored her privately after failing to secure her admission to the university. They had a fruitful intellectual, and kindly personal relationship that "far transcended the usual teacher-student relationship". They shared letters starting in

1872 to 1874, many at the beginning were about identifies of theta function,

She took some time out of her studies to to assist with her sister during the Paris Commune. In 1874 she presented three papers—on partial differential equations, on the dynamics of Saturn's rings, and on elliptic integrals. The paper on partial differential equations contains what is now known as the Cauchy–Kovalevskaya theorem, which proves the existence and analyticity of local solutions uniqueness theorem for analytic partial differential equations associated with Cauchy initial value problems.

In 1874, Sofja and Vladimir returned to Russia, Sofja was unable to gain a Professorship due to her sex and Vladimir was unable to gain one due to his radical belifes, they tried to make money through schemes, but after them

Friedrich Theodor Schubert (1758-1825), his son her

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On her maternal side her great-grandfather immigrated from Germany to Russia was the astronomer and geographer Friedrich Theodor Schubert (1758-1825), his son her

She may have been inspired by her sister Ann who was a revolutionary

Gösta Mittag-Leffler took great trouble and procured Sofia Kovalevskaya a position of full professor of mathematics in Stockholm University

All human things are subject to decay. And when fate summons, Monarchs must obey.

2   First Section

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References