Women in Mathematics

University of Illinois, Urbana-Champaign

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Outline

1. What is the AWM?

2. Who was Sonia Kovalevsky?
   - Quick Facts
   - Early Life

3. What About Now?
What is the Association for Women in Mathematics?

- The AWM is a non-profit organization with over 3,000 members.
- The mission of AWM is to encourage women and girls to study and to have active careers in the mathematical sciences, and to promote equal opportunity and the equal treatment of women and girls in the mathematical sciences.
What is the AWM?

- Founded in 1971
- It offers many programs, workshops, and conferences to mentor women and girls in the mathematical sciences.
- Started Sonia Kovalevsky High School Mathematics Days in 1985. The purposes of these programs are to encourage young women to continue their study of mathematics and to assist the teachers of women mathematics students.
UIUC Chapter

- We organize events like this one!
- Hold seminars, workshops, and social events for graduate students.
- Website: [www.math.illinois.edu/awm](http://www.math.illinois.edu/awm)
Quick Facts

First woman to earn a PhD in Mathematics.

Born January 15th, 1850, in Moscow, Russia.

Died at age 41, February 10th, 1891, in Stockholm, Sweden.

Wrote poetry, fiction, and an autobiography.
Early Life

Childhood

Sonia grew up on her family’s estate, Palibino. Her father, Vasily Korvin-Krukovsky, was a general in the Russian army and her mother, Yelizaveta Shubert, came from a family of scholars.

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Her room was wallpapered using old calculus lecture notes found in the attic. As a child she tried to study these pages, although she couldn’t fully understand them.
Sonia’s father did not want her to study math. At 13, she smuggled an algebra book into the house and studied in secret. At 14, she taught herself trigonometry so that she could study a physics text book her neighbor had written.
Early Life

In 1870, Sonia moved to Berlin to work with Karl Weierstrass. The university would not even allow her to unofficially attend lectures, so Weierstrass gave her private lessons.

By 1874, Sonia had written three research papers. The University of Göttingen was so impressed with her work, they awarded her a PhD.
“Many who have had an opportunity of knowing any more about mathematics confuse it with arithmetic, and consider it an arid science. In reality, however, it is a science which requires a great amount of imagination.”

“Say what you know, do what you must, come what may.”
Modern Mathematics

What is the situation now?
Modern Mathematics

In 2014, a woman won the highest prize in mathematics.

The fields prize is awarded every four years to 2-4 mathematicians under 40.

Maryam Mirzakhani studies the dynamics and geometry of Riemann surfaces and their moduli spaces.
Some Other Great Modern Female Mathematicians

**Maria Chudnovsky** studies structural graph theory and combinatorial optimization.

- 2012 MacArthur Fellow
- 2009 Fulkerson Prize

**Bryna Kra** uses dynamical methods to address problems in number theory and combinatorics.

- 2010 Conant Prize
Some Other Great Modern Female Mathematicians

Melanie Wood studies Belyi-extending maps and P-orderings.

2004 Morgan Prize