

Maria Gaetana Agnesi



Date of Birth May 16, 1718

Date of Death January 9, 1799

Place of Birth Italy

Education Ms. Agnesi was homeschooled by her father and a circle of the most learned men in Bologna. Later, she received a diploma from Università di Bologna.

Publications *Instituzioni analitiche ad uso della gioventu italiana*
Introduction of the works of Euler, v1: finite quantities; v2: analysis of infinitesimals
Traite analytique des sections coniques of the marquis de l'Hopital (written, never published)

Contributions to Mathematics

- * credited with writing the first book discussing differential and integral calculus
- * best introduction to the works of Euler
- * discussed the curve known as the “witch of Agnesi” or “versiera” (type 63 in Newton’s classification)
Example of the curve: $y = \frac{8a^3}{(x^2 + 4a^2)}$ where a is any non-zero constant.

Peers & Friends

- * P. T. d’Antelmy
- * Charles Bossut
- * John Colson
- * John Hellins

Fun Facts

- * spoke 7 languages: French, Italian, Greek, Hebrew, Spanish, German, Latin (called “Walking Polyglot”)
- * recognized as a child prodigy
- * lived in an conventual semi-retirement, avoiding all interactions with society
- * 2nd woman to be appointed professor at university
- * A crater on Venus was named in her honor.

Emmy Amalie Noether



Date of Birth March 23, 1882

Date of Death April 14, 1935

Place of Birth Erlangen, Germany

Education

- * audited various classes at Erlangen University
- * later enrolled as a mathematics student
- * received doctorate in 1907

Publications *Abstrakter Aufbau der Idealtheorie in algebraischen Zahl- und Funktionenkörpern*

Contributions to Mathematics

- * Noether's theorem: theoretical physics (1-1 correspondence: symmetries & conservation laws)
- * Lasker-Noether theorem: commutative algebra (decomposition of ideals into primary ideals)
- * Noetherian rings (every ideal is finitely generated)
- * Co-found the theory of central simple algebras
- * Noether isomorphism theorems
- * Chain conditions on ideals of rings

Peers & Friends

- * Albert Einstein
- * Paul Gordan
- * David Hilbert

Fun Facts

- * Einstein said "She is the most significant creative mathematical genius thus far produced since the higher education of women began."
- * joined faculty at Bryn Mawr College in the U.S.
- * died in mysterious circumstances during or after a needed surgery
- * buried in Cloisters of Thomas Great Hall

Marie-Sophie Germain

Date of Birth April 1, 1776

Date of Death June 27, 1831

Place of Birth Paris, France



Education Ms. Germain received an honorary degree from the University of Gottingen

Publications

- * Analysis of Joseph-Louis Lagrange's teachings
- * Analysis of Carl Friedrich Gauss' *Disquisitiones Arithmeticae*

Contributions to Mathematics

- * Explained Ernst Chladni's study of vibrations of elastic surfaces (earning title of 'great mathematician')
- * Major contributions to number theory
 - Example: if x , y , and z are integers, and $x^5 + y^5 = z^5$ then either x , y , or z has to be divisible by five
 - This proof became quite significant as it restricted the possible solutions to Fermat's last theorem.
- * Sophie Germain prime: a prime number (p) where $2p + 1$ is also prime
- * Sophie Germain's Identity
- * Central contribution was in the field of elasticity theory

Peers & Friends

- * Joseph-Louis Lagrange
- * Carl Friedrich Gauss
- * General Pernety

Fun Facts

- * published under pseudonym 'Monsieur Le Blanc'
- * 1st female to attend sessions at French Academy of Sciences
- * A crater on Venus was named in her honor.

Sofia Krukovsky Kovalevskaya

Date of Birth January 15, 1850

Date of Death February 10, 1891

Place of Birth Moscow, Russia



Sofia Kovalevskaya (1850-1891)

Education

- * Sofia was tutored by Strannoliubskii in mathematics (calculus specifically.)
- * She earned a doctorate (summa cum laude) from the University of Gottingen

Publications

- * Analysis of the dynamics of Saturn's rings
- * The Theory of Partial Differential Equations
- * Paper on Abelian integrals

Contributions to Mathematics

- * Sonia Kovalesvsky High School Mathematics Day (encouraging girls to explore math)
(a program and grant making initiative of Association for Women in Mathematics)
- * Work on partial differential equations
- * Significant analysis of Abelian integrals
- * Ration of a solid body about a fixed point
- * Developed theory for an unsymmetrical body where the center of its mass is not on an axis in the body
- * Contributions to ground-breaking theories in mathematics and mathematical physics (impetus for future work)

Peers & Friends

- * Karl Weierstrass
- * Professor Tyrto
- * Gosta Mittag-Leffler
- * Anna Leffler

Fun Facts

- * 1st major Russian female mathematician
- * 1st woman appointed to full professorship in Europe
- * 1st woman in Europe to earn a doctorate in math
- * A crater on the moon was named in her honour.

Countess Augusta Ada King

Date of Birth December 10, 1815

Date of Death November 27, 1852

Place of Birth London, England



Education * home schooled in math & science by William Frennd, William King, and Mary Somerville
* tutored by Augustus De Morgan

Publications * translation of Luigi Menabrea's memoir on Babbage's *Analytical Engine*
* Analysis of Bernoulli numbers

Contributions to Mathematics

- * Description of Charles Babbage's early mechanical general-purpose computer, the analytical engine
- * Contributions in the analysis of parallelograms and their relationships
- * Complete detail of a method to calculate Bernoulli numbers (the world's first computer programmer)
U.S. Defense Department created the computer language, Ada, in honour of her work

Peers & Friends

- * Mary Somerville
- * Charles Babbage
- * Sir David Brewster
- * Charles Wheatstone
- * Charles Dickens
- * Michael Faraday

Fun Facts

- * legitimate child of poet Lord Byron
- * Lord Byron called her the 'princess of parallelograms'
- * married full name and title
The Right Honourable August Ada,
Countess of Lovelace
- * image can be seen on Microsoft product holograms

Hypatia of Alexandria

Date of Birth between 350-370 AD

Date of Death 415 AD

Place of Birth Greece or Egypt



Education

- * member of the Platonic school
- * follower of Plato

Publications

- * Diphantus's Arithmetica (contributed)
- * Apollonius's Conics (co-discovered)
- * Ptolemy's works (commentary)

Contributions to Mathematics

- * taught in the fields of astronomy, astrology, mathematics, and philosophy
- * invention of the astrolabe
- * invention of the hydrometer
- * considered first notable woman in math

Peers & Friends

- * Synesius, Bishop of Ptolemais
- * Socrates Scholasticus
- * Plato
- * Plotinus

Fun Facts

- * head of Platonic school
- * considered a 'symbol of virtue'
- * A crater on the moon is named after her.

Rear Admiral Grace Murray Hopper

Date of Birth December 9, 1906

Date of Death January 1, 1992

Place of Birth New York City, United States



Education

- * Prep School: Hartridge School, Plainfield, NY
- * graduated Phi Beta Kappa from Vassar College, BS in mathematics and physics
- * Ph.D. in mathematics, Vassar College

Publications

- * New Types of Irreducibility Criteria
- * “It’s easier to ask forgiveness than it is to get permission” is attributed to her.

Contributions to Mathematics

- * American computer scientist, programmer of Harvard Mark I calculator, Mark II, and Mark III for math
- * developed the first compiler for computer programming language
- * discovered a ‘moth’ in a relay -- a bug in the computer
- * team member developing UNIVAC I
- * Compilers: ARITH-MATIC, MATH-MATIC, FLOW-MATIC
- * validation software for programming language COBOL (based on her philosophy)
- * nanoseconds visual aid, satellite communications

Peers & Friends

- * Howard Aiken
- * Rep. Philip Crane

Fun Facts

- * Enlisted with the Navy, Rank of Rear Admiral
- * Received numerous awards during her years of service
- * sometimes referred to as ‘Amazing Grace’
- * pioneered implementation of standards for testing
- * Goodwill Ambassador with Digital Equip Corp.
- * 1st to be made a Distinguished Fellow of the British Computer Society

Marjorie Lee Browne

Date of Birth September 9, 1914

Date of Death October 19, 1979

Place of Birth Tennessee, United States



Education

- * attended LeMoyne High School (a private Methodist school)
- * Howard University, majoring in mathematics, graduated cum laude
- * graduated University of Michigan in mathematics

Publications

- * Studies of One Parameter Subgroups of Certain Topological and Matrix Groups
- * Sets, Logic, and Mathematical Thought
- * Introduction to Linear Algebra, Elementary Matrix Algebra, Algebraic Structures

Contributions to Mathematics

- * Classical groups demonstrated by simple proofs
- * Important topological properties of and relations between classical groups
- * General focus on linear and matrix algebra

Peers & Friends

- * George Yuri Rainich
- * Evelyn Boyd Granville
- * Joseph Battle
- * William Fletcher
- * Asamoah Nkwanta
- * Nathan Simms

Fun Facts

- * one of first African-Amer women to receive doctoral
- * one of first black women to receive doctoral in math
- * elected to Sigma Xi

Melanie Eggers Matchett Wood

Date of Birth 1981

Date of Death still living

Place of Birth Indianapolis, Indiana, United States



Melanie Wood has made the most of the opportunities presented to her in math.
Photo by Jim Wallace

Education

- * high school: Park Tudor School, Indianapolis, Indian
- * Ph.D. candidate mathematician, Princeton University
- * Duke University

Publications

- * P-orderings: a metric viewpoint and the non-existence of simultaneous orderings
- * USA and International Mathematical Olympiads 2005
- * Density of Discriminants of S_3 - sextic number fields (asymptotic formula)

Contributions to Mathematics

- * Belyi-extending maps
- * P-orderings
- * psycholinguistics, physics, and economics with regards to mathematics

Peers & Friends

- * Andrea Bertozzi

Fun Facts

- * 1st place in Math Counts with no preparation
- * 1st female Amer. to make U.S. Int'l Math Olympiad
- * 1st woman named Putnam Fellow
- * Fulbright & Gates Cambridge Fellowship (UK)

Florence Nightingale

Date of Birth May 12, 1820

Date of Death August 13, 1910

Place of Birth Florence, Grand Duchy of Tuscany



Education

- * homeschooled by her father
- * tutored in mathematics by James Sylvester

Publications

- * Statistical reports, graphic representation for hospital reform
- * Medical tourism based on letters
- * Notes on Nursing

Contributions to Mathematics

- * pioneer of nursing, reformer of hospital sanitation methods
- * use of new techniques of statistical analysis in math
- * polar-area diagram (static being represented is proportional to the area of a wedge in a circular diagram)
- * revolutionized idea that social phenomena could be measured and subjected to math analysis
- * innovator in the collection, tabulation, interpretation, and graphical display of descriptive statistics
- * circular histogram, rose diagram

Peers & Friends

- * Karl Pearson
- * Richard Monckton Mines, 1st Baron Houghton
- * Sidney Herbert, Secretary of War
- * Benjamin Jowett
- * Duke of Cambridge
- * Elizabeth Blackwell
- * Linda Richards

Fun Facts

- * Fellow of the Royal Statistical Society
- * known as 'The Lady with the Lamp'
- * most famous Victorian after Queen Victoria
- * Central role in establishing Royal Commission on the Health of the Army