

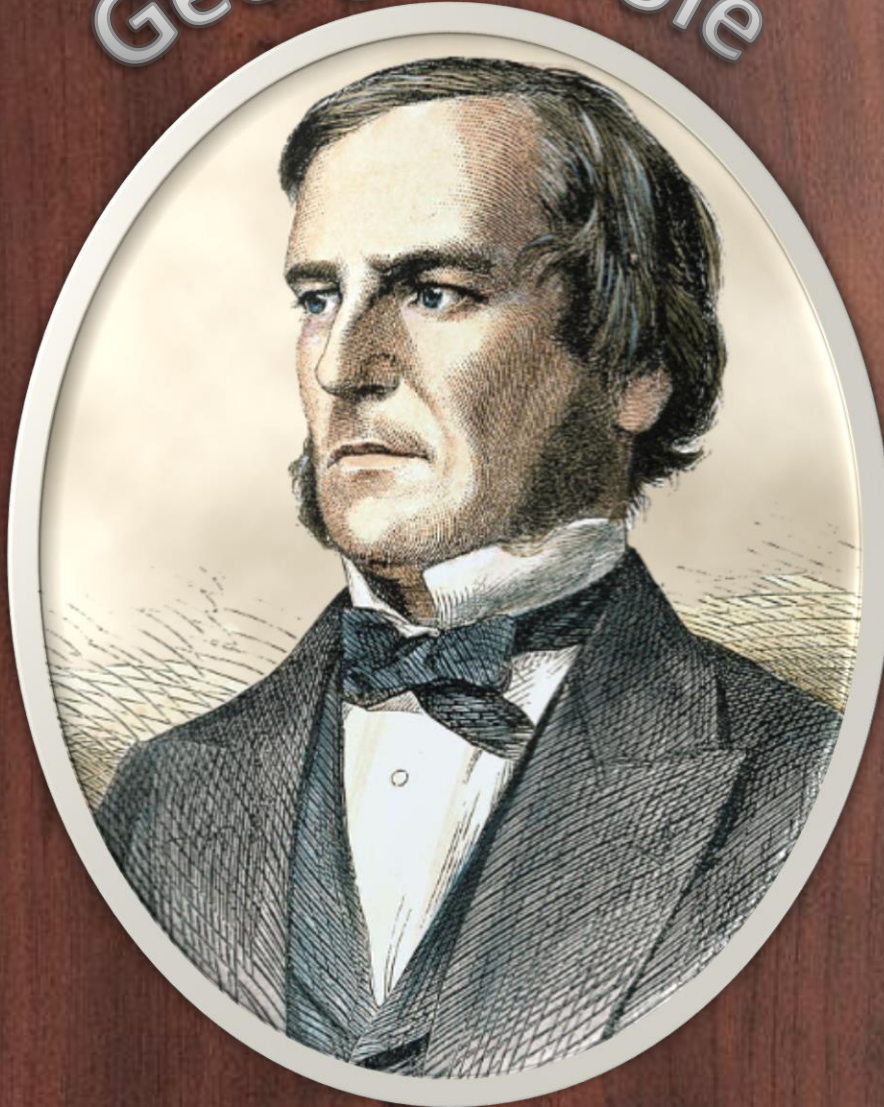
ARCHIMEDES



287 - 212 B.C.

He is the most famous mathematician and inventor of ancient Greece. Archimedes is especially important for his discovery of the relation between the surface and volume of a sphere and its circumscribing cylinder. He is known for his formulation of a hydrostatic principle (known as Archimedes' principle) and a device for raising water, still used in developing countries, known as the Archimedes screw.

George Boole



(1815-1864)

George Boole (1815–1864) was an English mathematician and a founder of the algebraic tradition in logic. He worked as a schoolmaster in England and from 1849 until his death as professor of mathematics at Queen's University, Cork, Ireland. He revolutionized logic by applying methods from the then-emerging field of symbolic algebra to logic. Where traditional (Aristotelian) logic relied on cataloging the valid syllogisms of various simple forms, Boole's method provided general algorithms in an algebraic language which applied to an infinite variety of arguments of arbitrary complexity.

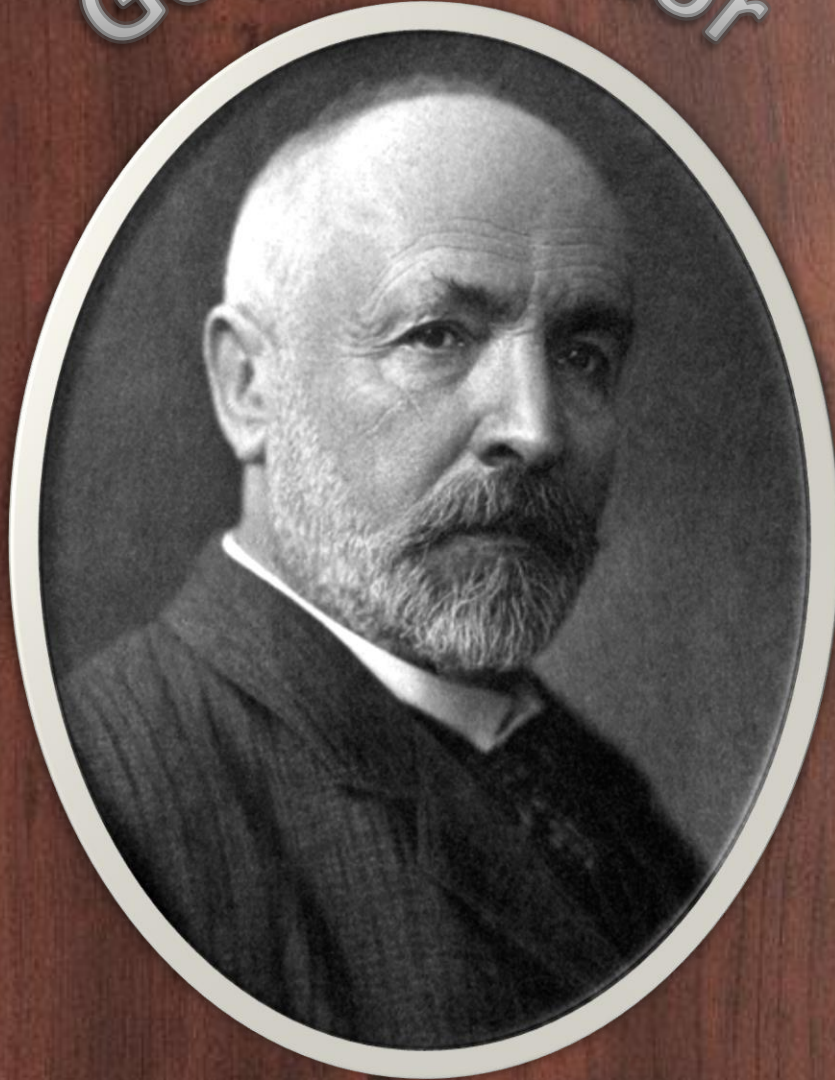
Johann Bernoulli



1667-1748

He investigated the then new mathematical calculus, which he applied to the measurement of curves, to differential equations, and to mechanical problems. The son of a pharmacist, Johann studied medicine and obtained his doctor's degree in Basel in 1694, with a thesis on muscular contraction. However, he turned to mathematics despite his father's opposition. In 1691–92 he wrote two texts, not published until later, on differential and integral calculus. In 1692 he taught calculus to the mathematician Guillaume-François-Antoine de L'Hospital, who agreed to pay him for mathematical discoveries. From 1695 to 1705 he taught mathematics at Groningen, Neth., and, on the death of his elder brother, Jakob, assumed a professorship at Basel.

Georg Cantor



(1845-1918)

He revolutionized the foundation of mathematics with set theory. Set theory is now considered so fundamental that it seems to border on the obvious but at its introduction it was controversial and revolutionary. The controversial element centered around the problem of whether infinity was a potentiality or could be achieved. Before Cantor it was generally felt that infinity as an actuality did not make sense; one could only speak of a variable increasing without bound as that variable going to infinity. That is to say, it was felt that $n \rightarrow \infty$ makes sense but $n = \infty$ does not. Cantor not only found a way to make sense out of an actual, as opposed to a potential, infinity but showed that there are different orders of infinity. This was a shock to people's intuition.

JOHN CONWAY



John Horton Conway (1937 - 2020) is a British mathematician active in the theory of finite groups, knot theory, number theory, combinatorial game theory and coding theory. He has also contributed to many branches of recreational mathematics, notably the invention of the cellular automaton called the Game of Life.

Conway is currently Professor of Mathematics and John Von Neumann Professor in Applied and Computational

EUCLID



circa 300 B.C.

He was the most prominent mathematician of Greco-Roman antiquity, best known for his Treatise on Geometry, the *Elements*. Of Euclid's life nothing is known except what the Greek philosopher Proclus (c. ad 410–485) reports in his “summary” of famous Greek mathematicians. According to him, Euclid taught at Alexandria in the time of Ptolemy I Soter, who reigned over Egypt from 323 to 285 BC. Proclus supported his date for Euclid by writing “Ptolemy once asked Euclid if there was not a shorter road to geometry than through the *Elements*, and Euclid replied that there was no royal road to geometry.” Today few historians challenge the consensus that Euclid was older than Archimedes (c. 290/280–212/211 BC).

Leonhard Euler



(1707-1783)

He was arguably the greatest mathematician of the eighteenth century (His closest competitor for that title is Lagrange) and one of the most prolific of all time; his publication list of 886 papers and books may be exceeded only by Paul Erdős. Euler's complete works fill about 90 volumes. Remarkably, much of this output dates from the last two decades of his life, when he was totally blind..

Joseph Fourier



1768-1830

Jean Baptiste Joseph Fourier (March 21, 1768 – May 16, 1830) was a French mathematician and physicist who is best known for initiating the investigation of Fourier series and their application to problems of heat flow. The Fourier transform is also named in his honor. Fourier went with Napoleon on his Eastern expedition in 1798, and was made governor of Lower Egypt. He also contributed several mathematical papers to the Egyptian Institute which Napoleon founded at Cairo, with a view of weakening English influence in the East. After the British victories and the capitulation of the French under General Menou in 1801, Fourier returned to France, and was made prefect of Grenoble, and it was while there that he made his experiments on the propagation of heat.

Carl Friedrich Gauss



(1777-1855)

He was one of the greatest mathematicians of all time. He combined scientific theory and practice like no other before him, or since. His *Disquisitiones arithmeticae*, published in 1801, stands to this day as a true masterpiece of scientific investigation. In the same year, Gauss gained fame in wider circles for his prediction, using very few observations, of when and where the asteroid Ceres would next appear. The method of least squares, developed by Gauss as an aid in his mapping of the state of Hannover, is still an indispensable tool for analyzing data. His sextant is pictured on the last series of German 10-Mark notes, honoring his considerable contributions to surveying. Another interesting note, during his time duels were considered acceptable way to resolve intense arguments. Gauss won 13 consecutive duels with pistols. At a certain point in his life, many didn't argue with him for fear of being challenged to a duel.

Hypatia



360 – 415 A.D.

No one can know who was the first female mathematician, but Hypatia was certainly one of the earliest. She was the daughter of Theon, the last known member of the famed library of Alexandria, and followed his footsteps in the study of math and astronomy. She collaborated with her father on commentaries of classical mathematical works, translating them and incorporating explanatory notes, as well as creating commentaries of her own and teaching a succession of students from her home. Hypatia was also a philosopher, a follower of Neoplatonism, a belief system in which everything emanates from the One, and crowds listened to her public lectures about Plato and Aristotle. Her popularity was her downfall, however. She became a convenient scapegoat in a political battle between her friend Orestes, the governor of Alexandria, and the city's archbishop, Cyril, and was killed by a mob of Christian zealots.

Katherine Johnson



1918–2020 A.D.

Katherine Johnson was an American mathematician who calculated and analyzed the flight paths of many spacecraft during her more than three decades with the U.S. space program. Her work helped send astronauts to the Moon. She graduated from college at the age of 18. She began working in aeronautics as a "computer" in 1952, and after the formation of NASA, she performed the calculations that sent astronauts into orbit in the early 1960s and to the moon in 1969. Johnson was honored with the Presidential Medal of Freedom in 2015 and saw her story brought to light through a book and a feature film the following year. She passed away on February 24, 2020, at the age of 101.

René Descartes



(1596-1650)

He was a creative mathematician, an important scientific thinker, and an original metaphysician. During the course of his life, he was a mathematician first, a natural scientist or “natural philosopher” second, and a metaphysician third. In mathematics, he developed the techniques that made possible algebraic (or “analytic”) geometry. In natural philosophy, he can be credited with several specific achievements: co-framer of the sine law of refraction, developer of an important empirical account of the rainbow, and proposer of a naturalistic account of the formation of the earth and planets. In childhood, he was often sick with upper respiratory problems. His dad made arrangements so that René was always permitted to sleep in before attending school because of his condition.

Felix Klein



1849-1925

A German mathematician whose unified view of geometry as the study of the properties of a space that are invariant under a given group of transformations, known as the Erlanger Programm, profoundly influenced mathematical developments. Beyond his own work Klein made his greatest impact on mathematics as the principal architect of the modern community of mathematicians at Göttingen, which emerged as one of the world's leading research centres under Klein and David Hilbert (1862–1943) during the period from 1900 to 1914.

Gottfried Wilhelm Leibniz



1646-1716

He was one of the great thinkers of the seventeenth and eighteenth centuries and is known as the last “universal genius”. He made deep and important contributions to the fields of metaphysics, epistemology, logic, philosophy of religion, as well as mathematics, physics, geology, jurisprudence, and history. Leibniz made many contributions to the study of differential equations discovering the method of separation of variables, reduction of homogeneous equations to separable ones, and the procedure for solving first order linear equations. He used the idea of the determinant 50 years before Cramer, and did work on the multinomial theorem.

Guillaume-François- Antoine de L'Hopital



1661-1704

Guillaume-François-Antoine de L'Hopital (1661-1704) was a famous mathematician that has been given credit for coming up with "L'Hopital's rule". This rule is a method for finding the limit of a rational function whose numerator and denominator tend to zero at a point. L'Hopital was the son of a lieutenant-general in one of the king's armies. This meant that he was expected to have a military career. He showed no talent in the military and showed extraordinary talent in mathematics. So soon after he was forced to resign from the military due to near-sightedness he devoted all his time to mathematics.

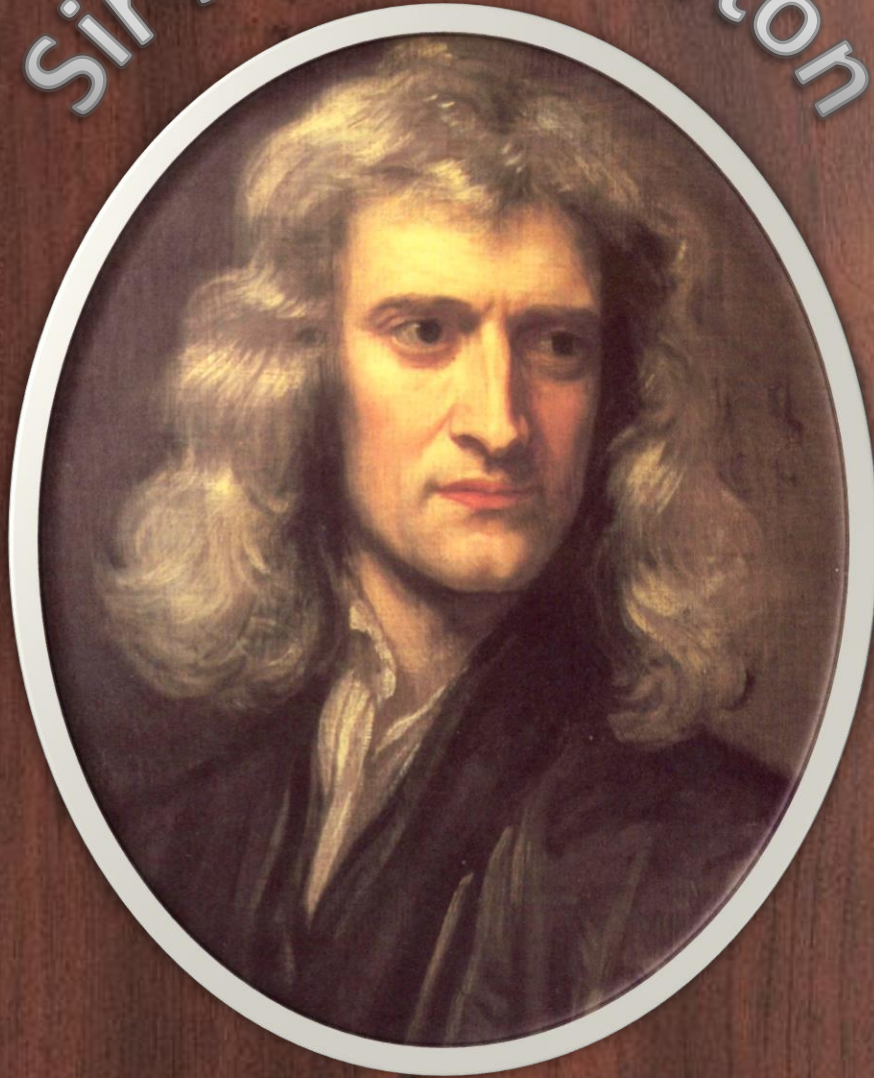
John Forbes Nash



1928-2015

John Forbes Nash is an internationally recognized, highly-appreciated and highly influential mathematician who has made outstanding contributions to differential geometry, partial differential equations, and game theory. His work in Game Theory famously revolutionized economics in the 1970s. Unfortunately, his success was challenged when he was diagnosed with paranoid Schizophrenia. Eventually he was able to overcome these challenges and returned to his work as a mathematician. The 2001 film, *A Beautiful Mind*, was based on his life and won many awards, including Best Picture at the Oscars. His life story is one filled with brilliance, unique challenges, and strength in overcoming them.

Sir Isaac Newton



(1642-1727)

He has been described by some as "one of the greatest names in human thought". Newton was responsible for discovering many outstanding scientific and mathematical concepts.

He came up with the Binomial Theorem and was one of the two creators of calculus. These discoveries represented a quantum leap in the fields of math and science allowing for calculations that more accurately modeled the behavior of the universe than ever before. Without these advances in math, scientists could not design vehicles to carry us and other machines into space and also plot the best and safest course. Calculus gave scientist the tools to set up a theoretical model of a situation and still account for varying factors.

PYTHAGORAS



circa 500 B.C.

Pythagoras of Samos is often described as the first pure mathematician. He is an extremely important figure in the development of mathematics yet we know relatively little about his mathematical achievements. Unlike many later Greek mathematicians, where at least we have some of the books which they wrote, we have nothing of Pythagoras's writings. The society which he led, half religious and half scientific, followed a code of secrecy which certainly means that today Pythagoras is a mysterious figure.

Sofia Kovalevskaya



1850-1891

Because Russian women could not attend university, Sofia Vasilyevna contracted a marriage with a young paleontologist, Vladimir Kovalevsky, and they moved to Germany. There she could not attend university lectures, but she was tutored privately and eventually received a doctorate after writing treatises on partial differential equations, Abelian integrals and Saturn's rings. Following her husband's death, Kovalevskaya was appointed lecturer in mathematics at the University of Stockholm and later became the first woman in that region of Europe to receive a full professorship. She continued to make great strides in mathematics, winning the Prix Bordin from the French Academy of Sciences in 1888 for an essay on the rotation of a solid body as well as a prize from the Swedish Academy of Sciences the next year.

David Hilbert



1862-1943

David Hilbert was born in Koenigsberg, East Prussia in 1862 and received his doctorate from his home town university in 1885. His knowledge of mathematics was broad and he excelled in most areas. His early work was in a field called the theory of algebraic invariants. In this subject his contributions equaled that of Eduard Study, a mathematician who, according to Hilbert, "knows only one field of mathematics." Next after looking over the work done by French mathematicians, Hilbert concentrated on theories involving algebraic and transfinite numbers.