

χ Maths · Society

Quotes

“Do not worry about your difficulties in mathematics, I can assure you mine are far greater”

— Albert Einstein

Mathematical Quotes

“If $P = NP$, then the world would be a profoundly different place than we usually assume it to be. There would be no special value in ‘creative leaps,’ no fundamental gap between solving a problem and recognising the solution once it’s found. Everyone who could appreciate a symphony would be Mozart; everyone who could follow a step-by-step argument would be Gauss...” – Scott Aaronson

“The only way to learn mathematics is to do mathematics.” – Paul Halmos

“There are things which seem incredible to most men who have not studied Mathematics.” – Archimedes

“The chief forms of beauty are order and symmetry and definiteness, which the mathematical sciences demonstrate in a special degree.” – Aristotle

“Neglect of mathematics works injury to all knowledge, since he who is ignorant of it cannot know the other sciences or the things of the world.” – Roger Bacon

“Perfect numbers like perfect men are very rare.” – Rene Descartes

“It is not enough to have a good mind. The main thing is to use it well.” – Rene Descartes

“So far as the theories of mathematics are about reality, they are not certain; so far as they are certain, they are not about reality.” – Albert Einstein

“Math is the language of the universe. So, the more equations you know, the more you can converse with the cosmos.” – Neil deGrasse Tyson

“To divide a cube into two other cubes, a fourth power or in general any power whatever into two powers of the same denomination above the second is impossible, and I have assuredly found an admirable proof of this, but the margin is too narrow to contain it.” – Pierre de Fermat

“Sadly, very little school maths focuses on how to win free drinks in a pub.” – Matt Parker

“In most sciences one generation tears down what another has built, and what one has established, another undoes. In Mathematics alone each generation adds a new storey to the old structure.” – Hermann Hankel

“If I were to awaken after having slept for a thousand years, my first question would be: has the Riemann Hypothesis been proven?” – David Hilbert

“One should always generalise.” – Carl Gustav Jacobi

“Number rules the universe.” – Pythagoras

“If only I had the theorems! Then I should find the proofs easily enough.” – Bernard Riemann

“The understanding of mathematics is necessary for a sound grasp of ethics.” – Socrates

“Beauty is the first test: there is no permanent place in the world for ugly mathematics.” – G. H. Hardy

“The difference between the poet and the mathematician is that the poet tries to get his head into the heavens while the mathematician tries to get the heavens into his head.” – G. K. Chesterton

“A mathematician is a machine for turning coffee into theorems.” – Alfred Renyi

“Weak coffee is suitable only for lemmas.” – Paul Turan

“What we really need is a machine for turning some of those theorems back into coffee.” – AJ Tolland

“Mathematics is the study of analogies between analogies. All science is. Scientists want to show that things that don't look alike are really the same. That is one of their innermost Freudian motivations. In fact, that is what we mean by understanding.” – Gian-Carlo Rota

“A mathematician is a blind man in a dark room looking for a black cat which isn't there.” – Charles Darwin

“Music is the pleasure the human mind experiences from counting without being aware that it is counting.” – Gottfried Leibniz

“I carried this problem around in my head basically the whole time. I would wake up with it first thing in the morning, I would be thinking about it all day, and I would be thinking about it when I went to sleep. Without distraction I would have the same thing going round and round in my mind.” – Andrew Wiles (who spent nearly a decade proving Fermat's Last Theorem)

“Mathematics, rightly viewed, possesses not only truth, but supreme beauty—a beauty cold and austere, like that of sculpture, without appeal to any part of our weaker nature, without the gorgeous trappings of painting or music, yet sublimely pure, and capable of a stern perfection such as only the greatest art can show.” – Bertrand Russell

“There are two ways to do great mathematics. The first is to be smarter than everybody else. The second way is to be stupider than everybody else - but persistent.” – Raoul Bott

“‘Obvious’ is the most dangerous word in mathematics.” – E.T. Bell

“Mathematics is a more powerful instrument of knowledge than any other that has been bequeathed to us by human agency.” – Descartes

“A topologist is someone who doesn't know the difference between a doughnut and a coffee cup.” – John Kelley

“Not everything that can be counted counts, and not everything that counts can be counted.” – Albert Einstein

“Arithmetic is being able to count to twenty without taking off your shoes.” – Mickey Mouse

“The simplest schoolboy is now familiar with facts for which Archimedes would have sacrificed his life.” – Ernest Renan

“An expert problem solver must be endowed with two incompatible quantities: a restless imagination and a patient pertinacity.” – Howard Even

“Mathematical knowledge adds vigour to the mind, frees it from prejudice, credulity, and superstition.” – John Arbuthnot

“In Mathematics, the art of proposing a question must be held of higher value than solving it.”

- Georg Cantor

“No matter how correct a mathematical theorem may appear to be, one ought never to be satisfied that there was not something imperfect about it until it also gives the impression of being beautiful.” – George Boole

“Every good mathematician is at least half a philosopher, and every good philosopher is at least half a mathematician.” – Friedrich Frege

“A mathematician, like a painter or poet, is a maker of patterns. If his patterns are more permanent than theirs, it is because they are made with ideas.” – G. H. Hardy

“In Mathematics, you don't understand things, you just get used to them.”

- John von Neumann

‘Politicians use statistics as a drunken man uses lamp-posts - for support rather than illumination.’ – Andrew Lang

“If people do not believe that mathematics is simple, it is only because they do not realise how complicated life is.” – John von Neumann

“The art of doing mathematics consists in finding that special case which contains all the germs of generality.” – David Hilbert

“Mathematics, as much as music or any other art, is one of the means by which we rise to a complete self-consciousness. The significance of mathematics resides precisely in the fact that it is an art; by informing us of the nature of our own minds it informs us of much that depends on our minds.”
– John Sullivan

“Science is built up of facts, as a house is with stones. But a collection of facts is no more a science than a heap of stones is a house.”
– Henri Poincare

“I have had my results for a long time, but I do not yet know how I am to arrive at them.”
– Carl Friedrich Gauss

“The essence of mathematics lies in its freedom.”
– Georg Cantor

“In math, you’re either right or you’re wrong.”
– Katherine Johnson

“A mathematical theory is not to be considered complete until you have made it so clear that you can explain it to the first man whom you meet on the street.”
– David Hilbert

“Mathematics may be defined as the subject in which we never know what we are talking about, nor whether what we are saying is true.”
– Bertrand Russell

“The study of mathematics, like the Nile, begins in minuteness but ends in magnificence.”
– Charles Caleb Colton

“Guided only by their feeling for symmetry, simplicity, and generality, and an indefinable sense of the fitness of things, creative mathematicians now, as in the past, are inspired by the art of mathematics rather than by any prospect of ultimate usefulness.”
– E. T. Bell

*“In Math, you’re either right or you’re wrong”
- Katherine Johnson*

*“The beauty of Mathematics only shows itself to its more patient Followers.”
- Maryam Mirzakhani*

“Pure mathematics is, in its way, the poetry of logical ideas.” – Albert Einstein

“Mathematics is no more computation than typing is literature.”
– John Allen Paulos

“The moving power of mathematical invention is not reasoning but imagination.”
– Augustus de Morgan

“Proof by contradiction is one of a mathematician's finest weapons. It is a far finer gambit than any chess gambit - a chess player may offer the sacrifice of a pawn or even a piece, but a mathematician offers the game.”
– G. H. Hardy

“Prediction is very difficult, especially if it's about the future.” – Nils Bohr

“There is no branch of Mathematics, however abstract, which may not some day be applied to the real world.”
– Nikolai Lobachevsky

“Mathematics is the art of giving the same name to different things.”
– Henri Poincare

“One would have to have completely forgotten the history of science so as to not remember that the desire to know nature has had the most constant and the happiest influence on the development of mathematics.”
– Henri Poincare

“Mathematics is not just a subject, it is a language that allows us to unlock the mysteries of the universe.”
– Katherine Johnson

“It is not knowledge, but the act of learning, not possession but the act of getting there, which grants the greatest enjoyment.”
– Carl Friedrich Gauss

“Mathematicians stand on each other's shoulders.”
– Carl Friedrich Gauss

“I mean the word proof not in the sense of the lawyers, who set two half proofs equal to a whole one, but in the sense of a mathematician, where half proof = 0, and it is demanded for proof that every doubt becomes impossible.”
– Carl Friedrich Gauss

“Mathematics knows no races or geographic boundaries; for mathematics, the cultural world is one country.”
– David Hilbert

“Mathematics is a game played according to certain simple rules with meaningless marks on paper.”
– David Hilbert

“The further a mathematical theory is developed, the more harmoniously and uniformly does its construction proceed, and unsuspected relations are disclosed between hitherto separated branches of the science.” – David Hilbert

“No other question has ever moved so profoundly the spirit of man; no other idea has so fruitfully stimulated his intellect; yet no other concept stands in greater need of clarification than that of the infinite.”
– David Hilbert

“The more I study, the more insatiable do I feel my genius for it to be.” – Ada Lovelace

“Physics is becoming too difficult for the physicists.”
– David Hilbert

“I find discussing mathematics with colleagues of different backgrounds one of the most productive ways of making progress.”
– Maryam Mirzakhani

“Mathematics as an expression of the human mind reflects the active will, the contemplative reason, and the desire for aesthetic perfection. Its basic elements are logic and intuition, analysis and construction, generality and individuality.”
– Richard Courant

“Mathematics is the music of reason.”
– James Joseph Sylvester

“If I were again beginning my studies, I would follow the advice of Plato and start with mathematics.”
– Galileo Galilei

“Mathematics has beauty and romance. It's not a boring place to be, the mathematical world. It's an extraordinary place; it's worth spending time there.”
– Marcus du Sautoy

“Many who have not 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.”
– Sofia Kovalevskaya

“Mathematics is the result of mysterious powers which no one understands, and which the unconscious recognition of beauty must play an important part. Out of an infinity of designs a mathematician chooses one pattern for beauty's sake and pulls it down to earth.”
– Marston Morse

“Consequently he who wishes to attain to human perfection, must therefore first study Logic, next the various branches of Mathematics in their proper order, then Physics, and lastly Metaphysics.” – Maimonides

“Understand well as I may, my comprehension can only be an infinitesimal fraction of all I want to understand.”
– Ada Lovelace

“Some mathematics problems look simple, and you try them for a year or so, and then you try them for a hundred years, and it turns out that they're extremely hard to solve. There's no reason why these problems shouldn't be easy, and yet they turn out to be extremely intricate.”
– Andrew Wiles

“The traditional mathematician recognises and appreciates mathematical elegance when he sees it. I propose to go one step further, and to consider elegance an essential ingredient of mathematics: if it is clumsy, it is not mathematics.”
– Edsger Dijkstra

“Mathematics allows for no hypocrisy and no vagueness.”
– Stendhal

“It's fine to work on any problem, so long as it generates interesting mathematics along the way - even if you don't solve it at the end of the day.”
– Andrew Wiles

“The mistakes and unresolved difficulties of the past in mathematics have always been the opportunities of its future.”
– E. T. Bell

“I am interested in mathematics only as a creative art.” – G. H. Hardy

“It seems that if one is working from the point of view of getting beauty in one’s equations, and if one has really a sound insight, one is on a sure line of progress.” – Paul Dirac

“The true spirit of delight, the exaltation, the sense of being more than Man, which is the touchstone of the highest excellence, is to be found in mathematics as surely as poetry.”
– Bertrand Russell

“The trouble with the world is that the stupid are cocksure and the intelligent are full of doubt.”
– Bertrand Russell

“He is unworthy of the name of man who is ignorant of the fact that the diagonal of a square is incommensurable with its sides.” – Plato

“An elegantly executed proof is a poem in all but the form in which it is written.”
– Morris Kline

“No mathematician can be a complete mathematician unless he is also something of a poet.” – Karl Weierstrass

“Medicine makes people ill, mathematics makes them sad, and theology makes them sinful.” – Martin Luther

“Most likely, logic is capable of justifying mathematics to no greater extent than biology is capable of justifying life.” – Y. Manin

“A theory has the alternative of being right or wrong. A model has the third possibility; it may be right but irrelevant.” – Manfred Eigen

“To be a good general you must know mathematics, it serves to direct your thinking in a thousand circumstances.”
– Napoleon Bonaparte

“Good! He did not have enough imagination to become a mathematician.”
– David Hilbert (on hearing that a student has dropped maths to study poetry instead)

“STEP Questions lure you in. The first part will ask ‘if I have a fair coin what is the probability it comes up heads?’ The second bit will say: ‘if I have 5 biased coins and am blindfolded what is the probability it was raining last Tuesday?’” – Ed Tansley

“Mathematicians aren’t people who find Maths easy. They’re people who enjoy how hard it is.”
– A. Sainsbury

“We all make mistakes. Relentlessly. And that is nothing to be feared.”
-Matt Parker

“I have yet to see a problem, however complicated, which, when you looked at it the right way, did not become still more complicated.”
– Paul Anderson

“An interesting theorem of mathematics differs from interesting results in other fields because over and above the surprise and beauty of what it says, it has as ‘aspect of eternity’; it is always part of an infinite chain of results.” – Leo Zippin

“No amount of experimentation can ever prove me right but a single experiment might prove me wrong.” – Albert Einstein

“In the fall of 1972 President Nixon announced that the rate of increase of inflation was decreasing. This was the first time a sitting president used the third derivative to advance his case for re-election.” – Hugo Rossi

“I love maths because it is the unending, eternally beautiful and simple fabric that links all of life and existence... and studying it is brilliant fun!” – C. Cooper

“I love maths because you can transpose everything in the world into maths, therefore logicising and simplifying what is so chaotic. It puts the world into order.”
– E. Bailey, Winner of the Tim Harford Competition