



# THEORY OF KNOWLEDGE MATHEMATICS QUOTES

The angels keep their ancient places—  
Turn but a stone and start a wing!  
'Tis ye, 'tis your estranged faces,  
That miss the many-splendoured thing.

—Francis Thompson

Ab. Why, ye Gods, should two and two make four?

—Alexander Pope

May not Music be described as the Mathematics of sense, and Mathematics as the Music of reason?

—J. J. Sylvester

...but for harmony beautiful to contemplate, science would not be worth following.

—Henri Poincaré

Give me a fulcrum and I will move the world!

—Archimedes



No mathematician can be a complete mathematician unless he is also something of a poet. The mathematician does not study pure mathematics because it is useful; he studies it because he delights in it and he delights in it because it is beautiful.

—Henri Poincaré

The chief aim of all investigations of the external world should be to discover the rational order and harmony which has been imposed on it by God and which He revealed to us in the language of mathematics.

—Johannes Kepler

If there is anything that can bind the heavenly mind of man to this dreary exile of our earthly home and can reconcile us with our fate so that one can enjoy living,—then it is verily the enjoyment of the mathematical sciences and astronomy.

—Johannes Kepler

Mathematics is in the first place a language in which we discuss those parts of the real world which can be described by numbers or by similar relations of order. But with the workaday business of translating the facts into this language there naturally goes, in those who are good at it, a pleasure; what is translated comes to mean less to them than the logic and the style of saying it; and from these overtones grows mathematics as a literature in its own right. Mathematics in this sense is a form of poetry, which has the same relation to the prose of practical mathematics as poetry has to prose in any other language. The element of poetry, the delight in exploring the medium for its own sake, is an essential ingredient in the creative process.

—*J. Bronowski*

Perhaps the best reason for regarding mathematics as an art is not so much that it affords an outlet for creative activity as that it provides spiritual values. It puts man in touch with the highest aspirations and loftiest goals. It offers intellectual delight and the exaltation of resolving the mysteries of the universe.

—*Morris Kline*

The discoveries of science, the works of art are explorations—more, are explorations, of a hidden likeness. The discoveries of the artists presents in them two aspects of nature and fuses them into one. This is the act of creation in which an original thought is born, and it is the same act in original science and original art...[This view] alone gives a meaning to the act of appreciation; for the appreciator must see the movement, wake to the echo which was started in the creation of the work. In the moment of appreciation we live again the moment when the creator saw and held the hidden likeness... We re-enact the creative act, and we ourselves make the discovery again... The great poem and the deep theorem are new to every reader, and yet are his own experiences, because he himself re-creates them. They are the marks of unity in variety, and in the instant when the mind seizes this for itself, the heart misses a beat.

—*J. Bronowski*

There is one question on which mathematicians are sharply divided. It is the fundamental question as to what mathematics is... I have maintained that mathematics is the language of physics... Then what becomes of pure mathematics? ...a language can be considered in at least two different ways, either in relation to the purpose which it serves as a medium for the expression of ideas or in relation to its internal structure. The study of linguistic relations as revealed in grammar, syntax, and in comparative philology is a vital and necessary element for the appreciation of any language. I venture to make the suggestion that pure mathematics is in fact the philological aspect of the language of physics.

—*George Temple*

The science of pure mathematics may claim to be the most original creation of the human spirit.

—*A. N. Whitehead*

In any particular theory there is only as much real science as there is mathematics.

—*Immanuel Kant*

I wanted certainty in the kind of way in which people want religious faith. I thought that certainty is more likely to be found in mathematics than elsewhere. But I discovered that many mathematical demonstrations, which my teachers expected me to accept, were full of fallacies, and that, if certainty were indeed discoverable in mathematics, it would be in a new field of mathematics, with more solid foundations than those that had hitherto been thought secure. But as the work proceeded, I was continually reminded of the fable about the elephant and the tortoise. Having constructed an elephant upon which the mathematical world could rest, I found the elephant tottering, and proceeded to construct a tortoise to keep the elephant from falling. But the tortoise was no more secure than the elephant, and after some twenty years of very arduous toil, I came to the conclusion that there was nothing more that I could do in the way of making mathematical knowledge indubitable.

—Bertrand Russell

Experience has taught most mathematicians that much that looks solid and satisfactory to one mathematical generation stands a fair chance of dissolving into cobwebs under the steadier scrutiny of the next... Knowledge in any sense of a reasonably common agreement on the fundamentals of mathematics seems to be non-existent... The bald exhibition of the facts should suffice to establish the one point of human significance, namely, that equally competent experts have disagreed and do now disagree on the simplest aspect of any reasoning which makes the slightest claim, implicit or explicit, to universality, generality, or cogency.

—Eric T. Bell

We know the truth not only by reason but also by the heart. It is from this last source that we know the first principles and it is in vain that reason which has no part in it attempts to combat it... And it is on our knowledge of the heart and instinct that reason necessarily rests and that it founds on them all its discourse.

—Pascal

Humble thyself, impotent reason!

—Pascal

Why, sometimes I've believed as many as six impossible things before breakfast.

—Lewis Carroll

