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Pythagoras Theorem Decoded.

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Pythagorean theorem

An "oldie but goodie" equation is the famous Pythagorean theorem, which every beginning geometry student learns.

It is one of the 11 Most Beautiful Mathematical Equations.

Mathematical equations aren't just useful — many are quite beautiful. And many scientists admit they are often fond of particular formulas not just for their function, but for their form, and the simple, poetic truths they contain.

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 The Pythagorean Theorem is credited to the the Greek mathematician Pythagoras, who lived in the sixth century B.C.

This formula describes how, for any right-angled triangle, the square of the length of the hypotenuse, c, (the longest side of a right triangle) equals the sum of the squares of the lengths of the other two sides (*a* and *b*). Thus, $a^2 + b^2 = c^2$

"The very first mathematical fact that amazed me was Pythagorean theorem," said mathematician Daina Taimina of Cornell University. "I was a child then and it seemed to me so amazing that it works in geometry and it works with numbers.

Abstract: It is astonishing to note that the 2500 year old, Pythagoras Theorem could be revolutionarily analysed and interpreted, in a two variable case , with the aid of axioms that have been deduced by me. Billions have learnt the Pythagoras Theorem and it is more than 2 millennia old. Hence, it is really incredulous and odd that the splendid equation was decoded by me, in a radical manner to help solve the same in an alternate fashion and its poignant characterestics. It is something we consider absolute and the foregone conclusion is , it cannot be, further revolutionarily analysed . But the miracle equation aids me in the same.

PROOF : Revoutionary analysing and interpreting the 2500 year old Pythagoras theorem. Now, what I have deduced regarding the Pythagoras theorem. If the hypotenuse of a right triangle, is the average of two numbers say, A and B ie (A+B)/2, then the legs are (A-B)/2 and $\sqrt{(AB)}$. On close inspection, one will find it, is identical to the General Theorem. General Theorem: If the hypotenuse of a right triangle is m^2+n^2, then the legs are m^2-n^2 and 2mn, where m, n are real numbers greater than 0 and m > n. One could also substitute A = N-1 and B = X^2. Thus, one could also, have the hypotenuse as $[(N-1)+X^2]$ and then the legs could be $[(N-1)-X^2]$ and $\{2X\sqrt{(N-1)}]$. Nothing substantially innovative in all of the above.

My Revolutionary result:

If the hypotenuse is product of two real numbers N and X i e {(NX)}, then the legs are $\{2X\sqrt{(N-1)}\}$ and {(N-2)X}. --- the revolutionary concept

Putting suitable values in the above, Pythagorean triplets can be generated. Suppose the hypotenuse c = 41 = NX and one of the legs is 9 ie a = 9 = (N-2)X. To find the other leg, we not c - a = 2X, hence X = ½ (c-a) = 16, in this case. Since NX = c then, N = c/X = 41/16. Hence, the other leg b = $\{2X\sqrt{(N-1)}\}$ = $2(16)\sqrt{\{(41/16)-1\}}$ = $32\sqrt{(25/16)}$ = 32(5/4) = 40. The above procedure, is useful when hypotenuse and a side are given, then to find the other side. Let us try another example. Where c = 39, b = 15. Here, c = NX and b is taken as (N-2)X then 2X = c-b = 39 - 15 ie X = 12 and N = c/X = 39/12 therefore a = $\{2X(\sqrt{(N-1)}\}$ = $2(12)\sqrt{(39/12-1)}$ = $24(\sqrt{(27/12)}$ = $24\sqrt{(9/4)}$ = 24(3/2) = 36. The role of a and b can be interchanged. Assuming the legs are given, to find the hypotenuse ie a = 6 and b = 8 to find c. In this case, the role of a and b cannot be interchanged. (N-2)X is the longer leg for large values of N. a = (N-2)X = 6 and b =. $\{2X\sqrt{(N-1)}\}$ = 8. To find c, a/b = $(N-2)/\{2\sqrt{(N-1)}\}$ = (3/4) = $(N-2)/\{2\sqrt{(N-1)}$ ie by guessing N=5. Normally to find the value of N, one need to solve a hard quadratic equation. Now X = 2, since 3X = 6, substituting in the value of a = 6. Now, c = NX = 10 which is the value of the hypotenuse. Let us consider another example. Let a = 40 and b = 9 ie a = (N-2)X = 40 and b = $2X\sqrt{(N-1)}$

= 9 ie $a/b = (N-2)/\{2\sqrt{(N-1)}\}$ ie $40/9 = (N-2)/\{2\sqrt{(N-1)}\}$ reduces to $81N^2 - 6724N + 6724=0$. On solving N = 82 , hence X = 1/2, therefore c = NX = 41. Some interesting facts observed. Where $c=\sqrt{(a^2+b^2)}$ ie in the conventional approach a would become equal to b with the result c would become irrational and hence can only be approximately analysed, inexact or to some extent nonsensical. Also, there is no way in preventing a and b to be same. When I looked profoundly into that, I found an irrational value is immeasurable, varying , not unique, and very well inexact and only considered to be approximate in value (in the irrational case, as an irrational number can only be analysed in an approximate sense in actuality.). That it does not have any rational basis and should be filtered and prevented. In the case considered , the legs could be interchanged, with the result we have filtered the irrational values , in the alternate sophisticated approach to the Pythagoras theorem

. P.N : If N is large (greater than 100) or something, the longer leg is always (N-2)X and the smaller leg is $\{2\sqrt{(N-1)(X)}\}$ and in all the cases the legs are never equal.

".....Some interesting facts observed.
When $c = \sqrt{(a2+b2)}$ ie in the conventional approach a would become equal to b, with the result c would become irrational and to some extent nonsensical. Also, there is no way in preventing a and b to be same. When I looked profoundly into that, I found an irrational value is immeasurable, varying , not unique, and very well inexact
and only can be considered to be approximate in value. That it does not have any rational basis because of inexactitude and should be filtered and prevented. Whereas, in the novel approach, alternative to the same, there is no possibility of the hypotenuse to be irrational and only one of the legs could be irrational. In that case considered , the legs could be interchanged, since the legs could be considered as either a or b , with the result we

have filtered and devoid of the irrational values, in the alternate sophisticated approach to the Pythagoras theorem."

Irrational values do not occur in nature. So the very purpose of indefiniteness is defeated and my approach serves this purpose. Pls be kind enough to have an in-depth, profound view of the same in a comprehensive and exhaustive manner.

Irrational values are not absolutely meaningful , since "good" rational approximations can only be obtained at any stage of the computation (assuming symbolic computation). And so this become a limitation of their nature . Suppose one wants to record the time event , rest frame in special relativity ie t' = 7^0.5 seconds, with an atomic clock. In practice, one can resort to only an approximation not an exactness, as is misrepresented in our school textbooks . I hope this is convincing now . For that, my miracle equation, which serves as a pythagoras theorem filtering out irrational values as well as decimal repeating values is adequate and sufficient .

Conclusion : Since the Pythagoras theorem has been decoded and Special Relativity utilises the same, it has been found it puts severe restrictions on SRT equations and it could be checked, verified and analysed. SRT is no longer valid in its claimed domain and it needs revision and correction under this scrutinising. Even the Special Theory of Relativity relies on the Pythagoras Theorem , which thereby has gaping holes, imperfect to the point that the grand predictions like cosmic time travel are thwarted, albeit, in terrestrial applications like GPS it is true. Miracle Equation helped decode the Pythagoras Theorem

Applications :. If the hypotenuse of a right triangle, is the average of two numbers say , A and B ie (A+B)/2, then the legs are (A-B)/2 and √(AB) . Hence in my peer-reviewed work “DOMAIN OF RELATIVISTIC MECHANICS”, I have taken t’ as |√(AB)| and t as (A+B)/2 and tv/c as (A-B)/2. Hence excepting (tv/c), all variable values in the modified time-dilation equation will have rational values and no decimal nonterminating- repeating values or irrational values. We are compelled in special relativity equations, for hypotenuse ie c or numerical value of t and a leg a or b equal to (N-2)X and numerical value of t', both to have known positive rational values, hence only v may assume decimal values, which is permissible. Albeit, v/c may turnout to be decimal in value, hence the necessity of it to be approximated in the journal work or my approach persists, still we are able to nail the range of values t, t' and v/c are able to attain. Hence, the domain of relativistic mechanics can be obtained.

Pythagoras Theorem can be analysed also in a single variable, in rare cases where difference between hypotenuse and one of the legs is 2. Here, the sides are (N,N-2, $\sqrt{4(N-1)}$)
Some questions could be
Q1. if c = 785 and b = 56, then a = N-2 = 785-2 = 783 .
Here, is another Q 2. if c = 362 a = 360 b=?
c= N = 362 N-2 = a =360 then b= $\sqrt{4(N-1)}$ = $2\sqrt{(N-1)}$ = $2\sqrt{361}$ =2*19 = 38 .