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**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.

# PROOF

Revoutionary analysing and interpreting the 2500 year old Pythagoras theorem.

Understanding the Pythagoras theorem, is essential or played a very great role in my analyzing the Special Theory Of Relativity. 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 √(AB) .Hence in my peer-reviewed work "DOMAIN OF RELATIVISTIC MECHANICS", I have taken t as

(A+B)/2 and t' as |√(AB)| .Hence excepting( tv/c), all variable values in the modified time dilation equation will have rational values and no decimal nonterminating values or irrational values

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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.

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Another way of stating the Pythagoras theorem is, if the hypotenuse is product of two real numbers N and X ie (NX),then the legs is {2 X √(N-1)} and (N-2)X. . One could also,have the hypotenuse as $[(N-1)+X^2]$ and then the legs could be $[(N-1)-X^2]$ and {2X √(N-1)}.

If the hypotenuse is product of two real numbers N and X ie (NX),then the legs are {2 X √(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 note 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 √(N-1)}= 2(16) √{(41/16)-1 }

=32√(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( √(N-1)}= 2(12) √(39/12-1 =24(√(27/12) =24 √(9/4)

=24(3/2)=36 .The role of a and b can be interchanged. It is the case considered in revised special relativity domain verification.

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 a=(N-2)X=40 and

b= 2X $\sqrt{}$(N-1= 9

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.

## <u>Some interesting facts observed</u>.

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 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.That it does not have any rational basis and should be filtered and prevented.Whereas, in the journal 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 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. We are compelled in special relativity equations ,for hypotenuse ie c or t and a leg a or b equal to (N-2)X ie 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 is obtained.

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 √(N-1)( X)} and in all the cases the legs are never equal.

## 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.

## Reference


1. Trigonometry by S.L.Loney
2. Trigonometry in Schuam Outline Series.