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Title: MIRACLE EQUATION-CAN BE USED TO SOLVE 3 VARIABLES IN A SINGLE EQUATION

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Abstract:
Before 2013,you required 3 equations to solve 3 variables.Now it isn't necessary

MIRACLE EQUATION

The bombshell of the 21st century: An algebraic formula developed by me.
I was preparing for SAT, more than 2 decades back. I studied and observed squares of numbers.
$20^2 = 400$
$21^2 = 441$
$22^2 = 484$
$23^2 = 529$

$24^2 = 576$
$25^2 = 625$
$26^2 = 676$
$27^2 = 729$
$28^2 = 784$
$29^2 = 841$
$30^2 = 900$

The difference between the first and last numbers, second and second last numbers and so on are as follows:
500, 400 , 300, 200 and 100. This differences looked unbelievable to me. To my observation, it was stunning to observe that the squares of the difference of numbers was falling into a definite pattern.

$30^2 - 20^2 = 500 = [26^2 - 24^2] \text{ x } 5$
$29^2 - 21^2 = 400 = [26^2 - 24^2] \text{ x } 4$
$28^2 - 22^2 = 300 = [26^2 - 24^2] \text{ x } 3$
$27^2 - 23^2 = 200 = [26^2 - 24^2] \text{ x } 2$
$26^2 - 24^2 = 100 = [26^2 - 24^2] \text{ x } 1$

At this stage, insight, institution and creativity had been triggered. The pattern, was further checked and studied by extending it to 10-20 range.

$10^2 = 100$
$11^2 = 121$
$12^2 = 144$
$13^2 = 169$
$14^2 = 196$
$15^2 = 225$
$16^2 = 256$
$17^2 = 289$
$18^2 = 324$
$19^2 = 361$
$20^2 = 400$

$20^2 - 10^2 = 300 = 60x5$
$19^2 - 11^2 = 240 = 60x4$
$18^2 - 12^2 = 180 = 60x3$

$17^2 - 13^2$= 120=*60x2*
$16^2 - 14^2$= 60=60x1

These observations, were further extensively checked and it led me to the formula.
$[N^2 - (N-2)^2]X = 4(N-1)X = [N-(1-X)]^2 - [N-(1+X)]^2$
where N and X are two variables.
Now, it is the triumph of creativity. It is a three way related formulae and hence, can be used to pose a question like given an equation,
$[A^2 - B^2]$ C = D= $E^2 - F^2$ where given E and F to find A, B , C and D. or alternatively posed as given A and C, to find B, D, E and F. where the Capital letters denote numbers, either Real or Complex. This is a formula so revolutionary that I would call it miracle equation. It is God's gift to me. Note, that my formula is capable of solving 2 variables in a single equation, which is conventionally impossible from a mathematical point of view. Also, understand that the modified form of special theory of relativity equations contain 3 variables. For instance $(t')^2 = (t)^2 - (tv/c)^2$.
Using my formula, 2 of the variables are determinate. Hence, the only remaining variable, which is the only unknown , now could be found out. In effect, in totality, in reality, all the variables can be determined or solved ie meaningful interpretation of the same can be made. From, hereon, we proceed keeping ,this in mind. No longer, is the Special Theory of Relativity Equations mysterious, inscrutable or perplexing. Armed with a formula like the above, we will pursue the same. Pythagoreans believed that the number 4 governs the world. It is there in my formula. Number theory can be the key to the understanding or unlocking the limits of the special theory of relativity. It reinforces the maxim "Mathematics is the Mother of all sciences".
VITAL DEDUCTION: The formula developed by me, serves as a way of solving two variables minimum or upto 3, maximum in a single equation, relating two sets of difference of squares of numbers. Hence, it is a paradox from mathematical point of view, although , it is only a particular solution. That can be miraculous, in nature, will be proved later, when considered it is analogous to

special relativity equations in number theory form. Something of trivial significance, is mentioned below. .Deviation :(Formula has one more use)

Let me rearrange the formula:

$[\surd[\{N^2-(N-2)^2\}X]^2+[N-(1+X)]^2=[N-(1-X)]^2$

ie of the form $A^2 + B^2 = C^2$

Hence, Pythagorean triplets can be generated by using this formula.

IN THE SHADOW OF EINSTEIN –

Applications in Special Theory of Relativity : The formula was invented 2 decades back. It was rejected, or considered trivial among most people I met or submitted, in India. Subsconsciously, feeling always, analogous to Special Relativity-- those issues, were boiling in my mind for more than a decade, when at last, it was serving as a catapult to my long standing cherished view, that it could be applied to Special Relativity equations and the domain of Relativistic Mechanics could be identified. I was awestruck at how , I arrived at it . In the original miracle equation X is replaced with X^2, the equation transforms to

$[N^2 - (N-2)^2]\, X^2=4(N-1)\, X^2=[N-(1- X^2)]^2-[N-(1+ X^2)]^2$

Finally it gets modified to

$[(NX)^2 - \{(N-2)X\}^2] = [N-(1-X^2)]^2-[N-(1+X^2)]^2 = 4(N-1)X^2$

on applying distributive property of multiplication over subtraction

PROOF: MIRACLE EQUATION- CAN BE USED TO SOLVE 3 VARIABLES IN A SINGLE EQUATION.

MIRACLE EQUATION:

$[(NX)^2 - \{(N-2)X^2] = [N-(1-X^2)]^2-[N-(1+X^2)]^2 = 4(N-1)X^2$

The above three way related algebraic formulae or equation or Algebraic Identity which is true for all real or complex values of N and X , is actually analogous to the equation

$[A^2-B^2] = C^2-D^2 = E$ where $A = NX$, $B = (N-2)\,X$, $C = [N-(1-X^2)]$, $D = [N-(1+X^2)]$ & $E = 4(N-1)X^2$ where A, B, C, D & E are five variables. One way of analyzing the same is, if anyone chooses one of these five variables, either A, B, C, D or E, the remaining 4 variables can be found out, by applying suitable values (by trial and error) to N and X, in the considered variable and the other variables turn out correspondingly to the same. Viewed alternatively, $A^2 — B^2 = C^2 — D^2$. Suppose one chooses C=1174. In my convention C= [N—(1—X^2)], I arbitrarily, choose X=15, therefore N = 950, therefore D = 724, A = 14250 and B = 14220. B, D and A could be found without calculators and that is mysterious. Even E can be found out. The second case or application is given below. Now, there is an interesting application wherein, we can utilize this equation to solve 3 unknown variables in a single equation. Assuming the 3 variabled equation is of the form ax + by + dz = k where a, b, d are coefficients and x, y, z are variables and k is the constant. Solution is given by x = A^2/a, y = B^2/(-b) and z = D^2/d, since equaton is of the form $A^2 — B^2 + D^2 = C^2$. Hence the solution to the equation 2x + 3y + 4z = 16. Here C = 4. Arbitrarily selected values of N = 1, X = 2 to satisfy C=[N—(1—X^2)] Ergo, x = 2, y = - 4/3 and z = 4. Alternatively. let us substitute X as any rational number. X can assume infinite values. (Albeit, if X is real ie for instance the irrational number case, we need not get exact solutions and might therefore get only approx. solutions). We could generate different values of N = C + 1 - X^2, corresponding to X equal any rational number. We can thereby, get infinite solutions to this equation, since the three variables are related to N and X only. We could resort to algorithm and programming at this stage, since a general equation is involved. Please note that C = √k. PN: When k is a perfect square, calculations are simple. Otherwise, multiply k by itself. For the equation to remain unchanged, multiply each term of LHS by k and then resort to the steps like below. Suppose one need to solve 2x + 3y + 4z = 13. Taking the necessary steps, the equation become s ie multiplying each term in the given equation by k = 13, it transforms into 26x + 39y + 52 z = 169, therefore x = A^2/a, y = B^2/(-b) and z = D^2/d. Here C = 13. If selected value of X = 2, N = k+1 - X^2 = 13+1- 4= 10. Therefore, x = 400/26 = 200/13, y = 256/(-/39) and z = 25/52 .Take another value of $X = 15$, then $N = k+1 - X^2 = 13+1-225$ =. -211, A= NX = -3165 B = (N—2) X = -3195 D=[N—(1+X^2)] = -437

x = A^2/a = 385277.8846 , y = $B^2/(-b)$ = -261744.2308 and z= D^2/d = 3672.480769. Verification 26x+39y+52 z =

169 26(385277.8846) - 39(261744.2308) + 52(3672.480769) = 169 (hence we can obtain infinite solutions to (x , y , z) for rational or real number solutions, but they need not be exact solutions, for set of irrational numbers. Suppose the equation is of the form lx + my + nz = k where if l = a then x = A^2/a, if otherwise l = -a then x = $A^2/(-a)$ and if m = b then y = $B^2/(-b)$. Otherwise if m = -b then y = $B^2/(b)$ and finally if n = +d then z = D^2/d, otherwise if n = - d then z = $D^2/(-d)$. Hence x, y and z can attain all sets of values pertaining to real numbers , where a, b, c & d > 0 . Hence, using a supercomputer or quantum computer a billion solutions can be obtained in a few minutes. The above equation can be treated as a Diophantine Equation, since integer and rational solutions of the same are exact. It (Miracle Equation) enhances the trinitarian concept. Well, the negative aspect of this article, someone could argue, one doesn't obtain all the solutions in one shot but the general solution, which ofcourse is the larger and greater picture and the absolute necessity.