Sum Of Forces In A Force - *A work in the conclusion of Fermat's last theorem and in Beal's conjecture.*

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Abstract: If \( A^X + B^Y = C^Z \), where \( A, B, C, X, Y, Z \) are all greater than 2, then \( A, B \) and \( C \) must have a common factor.


Keywords: Sum; Forces; Force; Fermat's last theorem; Beal's conjecture.

"The Beal Conjecture"

If \( A^X + B^Y = C^Z \), where \( A, B, C, X, Y, Z \) are all greater than 2, then \( A, B \) and \( C \) must have a common factor.

The proposal is true.

Carefully, in its expression, the field of definition was narrowed, for values of \( X, Y, Z \) greater than 2.

Due to the indisputable presence of the Pythagorean Theorem to the extension of the definition, the proposal is sufficient but not necessary.

The "Denotes and vice versa", the "Suffices and only then" the "sufficient and necessary condition", the "then and only then", with the extension to the set of integers, including 2 and 1 default values, doesn't render the sentence correct as necessary, but only as sufficient.

This paper will discuss two key parts.

Firstly the proof of Fermat's theorem, a proof which was not discussed in length in its first report consisting of two pages. Notably the simple mathematical proof of Fermat's last theorem, as notified in a mathematical association in Thessaloniki on 1-9-2005.

Secondly the possibility of expressing the sum of forces in a force. (Beal conjecture)

The PROOF for \( n \) odd number

The impossible of \( X^n + Y^n = Z^n \)

Where \( X, Y, Z \) are positive integers \( n > 2 \)

This proof was the result of many efforts and relevant observations for about seven years, when and where the theoretical proof stopped in an erroneous (not possible) manner, expression of relation.

The last was overcome as follows.

The proof of the impossible of \( X^n + Y^n = Z^n \) as a response to the phrase of HERACLITUS: "How can one escape that which never sets?"

The \( n \) odd number first. (suffices for every \( n \))

The \( X + Y/X^n + Y^n \) (The \( X + Y \) divides the \( X^n + Y^n \))

The \( Z > X \) \( X, Y, Z \) are positive integers.

\( Z = X + a \)

\( Z = Y + b \) \( a, b \) positive integers.

\( X^n + Y^n = Z^n = (X+a)^n \) \( (1) \)

\( X^n + Y^n = Z^n = (Y+b)^n \) \( (2) \)

The \( U(1) \) remainder of dividing \( X^n + Y^n \) by \( X + Y \) is zero.

The \( U(2) \) remainder of dividing \( X^n + Y^n \) by \( X + Y \) is zero.

\( U(1) = (-Y)^n + (Y+a)^n = -Y^n + a^n = 0 \Rightarrow Y^n + a^n = 0 \Rightarrow a^n = 0 \)

\( U(2) = (-Y)^n + (Y+b)^n = -Y^n + b^n = 0 \Rightarrow Y^n + b^n = 0 \Rightarrow a + b = 0 \) (atopic)

Thus it should be \( a + b = 0. \) But because \( a, b > 0 \) this is inappropriate-atopic.

Thus \( X^n + Y^n = Z^n \) is not possible in positive integers. (\( n \) odd number)

The PROOF for \( n \) even number

The proof of the impossible existence of positive integer solutions in the equality \( X^n + Y^n = Z^n \) when \( n > 2 \) is an even number and is done as follows:

When \( n > 2 \) is even \( n = 2k \) and \( k = 2^\mu \) (a power of 2) \( \mu = 1, 2, 3, 4, \ldots \)

Then \( (X^k)^2 + (Y^k)^2 = (Z^k)^2 \)
The positive integer solutions of this is given by:

1) \( Z = m^2 + n^2 \), \( m > n \)
2) \( X = 2mn \) first between them
3) \( Y = m^2 - n^2 \) odd-even numbers

When \( K = 2^\mu \) becomes:

1) \( (Z^{\mu/2})^2 = m^2 + n^2 \)
2) \( (X^{\mu/2})^2 = 2mn \)  \( \Rightarrow (2) \)
3) \( (Y^{\mu/2})^2 = m^2 - n^2 \)

The (1) and (3) they are written after simplification:

1) \( Z_i^2 - m^2 + n^2 \) \( \Rightarrow m^2 = Z_i^2 - n^2 \)
2) \( Y_i^2 - m^2 + n^2 \) \( \Rightarrow m^2 = Y_i^2 + n^2 \)

We will prove that the (1) and (3) it is impossible to be both true.

Because if \( m = Z_i^2 - n^2 \)

The \( Z_i^2 \) divides the \( m^2 \) because dividing \( Z_i = n \)

To \( Z_i \) divides its equal \( m^2 \) of the \( Y_i^2 + n^2 \), so it must be \( Z_i = n \) the \( m^2 = Y_i^2 + n^2 \) \( \delta \eta \lambda \alpha \delta \) to \( m^2 = Y_i^2 + Z_i^2 = 0 \) (atopic). Thus denotes that \( Z_i = m^2 + n^2 \) and \( Y_i^2 = m^2 - n^2 \) cannot be equally valid.

The Pythagorean theorem and the integer triads are and affirm this necessary condition where two integral triads cannot be presented with two identical values in both as perpendicular, vertical and perpendicular hypotenuse. This condition is the cause for which Fermat's theorem cannot have validity, (cannot have solutions), for an exponent even and force of 2. For any other even exponents that has an odd factor, the proof goes back to the case of the unnecessary exponent, because: If there is a factor of \( \omega \) so as \( 2^\kappa \times \phi \) then \( X^{2\kappa} + Y^{2\kappa} = Z^{2\kappa} \) becomes \((X^\omega)^{\omega} + (Y^\omega)^{\omega} = (Z^\omega)^{\omega} \) where \( \omega \) is an odd number.

**The Beal Conjecture**

\( A^X + B^Y = C^Z \) \( A,B,C \) have common factor.

Assuming \( A = a_1 a_2 a_3 \ldots a_m \) and \( B = b_1 b_2 b_3 \ldots b_n \) first numbers

\( \Gamma = \gamma_1 \gamma_2 \gamma_3 \ldots \gamma_n \) first numbers

Then \( a_1 ^X + a_2 ^X + a_3 ^X + \ldots + a_m ^X = \gamma_1 ^X + \gamma_2 ^X + \ldots + \gamma_n ^X \)  \( \left( a_m ^X \right. \) common factor)  

Assuming that a relation exists so as \( X,Y,Z \) \( Y < X < Z \)

\( Z = Y + K \) \( \kappa A \) \( X = Y + P \)

\( a_1 ^Y + a_2 ^Y + \ldots + a_m ^Y = \gamma_1 ^Y + \gamma_2 ^Y + \ldots + \gamma_n ^Y \)

Meaning that \( A^Y + B^Y = \Gamma^Y \)  \( \left( 2 \right) \) is true.

Meaning that \( A^Y + B^Y \neq \Gamma^Y \)  \( \left( 3 \right) \)

Therefore the relation (3) is true, it is Fermat relationship \( A^Y + B^Y \neq \Gamma^Y \) \( Y > 2 \)

The same for any relation \( X,Y,Z \) except \( X = Y = Z = 1 \) (relative simple integers)

And \( X = Y = Z = 2 \) (Pythagorean theorem)

The following are examples of the Beal conjecture, as explained by the necessity of a common factor. These are manufactured with the capability of common factor and so we get the sum of forces in a force.

1) \( 1 + 2^3 = 3^2 \)
2) \( 1 + 7 = 8 = 2^3 \)
3) \( 3^3 + 3^3 + 3^2 = 3 \times 3^3 \)
4) \( 7^3 + 7^3 = 2^3 \times 7^3 \)
5) \( 7^3 + 7^3 = 3^3 \)
6) \( 7^3 + 7^3 = 7 \times 14^3 \)
7) \( 7^3 + 7^3 = (7 \times 14)^3 \)
8) \( 7^3 + 7^3 = 98^3 \)
9) \( 3^3 \) Examples:

\( 563^1 = 178453547 \) and \( 561^3 = 176558481 \)

\( 563^3 - 561^3 = 1895066 \)

B^1 = 6805703422714147496
(561\times B)^3 + B^4 = (563\times B)^3

**Generally**
\[ A^\alpha - B^\beta = c, \quad c^\alpha \]
\[ (Ac)^\alpha - (Bc)^\beta = c^{\alpha+1} \]
\[ (Ac)^\alpha = (Bc)^\alpha + c^{\alpha+1} \]

Sum of forces in a force with a common factor.

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