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New York Science Journal

MARSLAND PRESS
Multidisciplinary Academic Journal Publisher

38461 Huang Xueming—Fermat*s Last Theorem

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Abstract: This paper attempts to prove Fermat's Last, Theorem using the proof by contradiction approach.
[Guangting Jing, **38461 Huang Xueming — Fermat*s Last Theorem.** *N Y Sci J* 2023;16(4):12-13] ISSN 1554-0200(print); ISSN 2375-723X (online) http://www.sciencepub.net/newyork. 03. doi:10.7537/marsnys160423.03.

Keywords: proof; contradiction

Introduction:

In the early 1960s, the author was first introduced to "Fermat's Conjecture". In the decades thereafter, the author intermittently carried out the research, and published three papers on *Potential Science* in 1992, one paper on the *Journal of Guizhou Normal University Supplement* in 1999, a number of related papers on preprints in 2004, and three related papers on *Symposium of the First National Conference on Civil Science and Technology Development* in June 2006. This paper is one of the latter three with slight modifications.

Theorem:

$$X^n+Y^n=Z^n \qquad (1)$$

Where n is a positive integer greater than 2;X, Y and Z have no positive integer solution.
Assume that Equation (1) consists of positive int
Proof:eger solutions x,y, and z,then z-x=a,
z=x+a, y-a=y_0, If the equation y=a,$x^n+a^n=(x+a)^n$ does not hold, then y cannot be equal to a, where y_0 is not equal to zero. y= y_0+a, leading to x,

$$y_0+a,x+a,x^n+(y_0+a)^n=(x+a)^n \qquad (2)$$

So

$$y_0{}^n+C_n^1ay_0{}^{n-1}+C_n^2a^2y_0{}^{n-2}+\cdots\cdots+C_n^{n-1}a^{n-1}y_0-C_n^1ax^{n-1}-C_n^2a^2X^{n-2}-\cdots\cdots-C_n^{n-1}a^{n-1}X=0 \qquad (3)$$

$$y_0{}^n=a\left(C_n^1x^{n-1}+C_n^2ax^{n-2}+\cdots\cdots+C_n^{n-1}a^{n-2}x-C_n^1y_0{}^{n-1}-C_n^2ay_0{}^{n-2}-\cdots\cdots-C_n^{n-1}a^{n-2}y_0\right) \qquad (4)$$

Observe that (4) formula a |$y_0{}^n$|Because a and $y_0{}^n$ are positive integers in the known conditions, there is no multiple relationship, so the formula of integral division violates the mathematical logic and cannot be established, so the assumption that (1) formula has a positive integer solution cannot be established, so in (1) formula, the assumption that n is a positive integer solution greater than 2 is not established, so in (1) formula, n is a positive integer greater than 2, X, Y, Z has no positive integer solution. The certificate is complete.

Note:

Overview of the "law of proof to the contrary"

The main steps can be summarized as follows: negation – inference – negation - affirmation, namely (1) negative conclusion: the conclusion of the hypothesis proposition is wrong, that is, the opposite of the positive conclusion is true (this can be used as a condition in the process of deduction); (2) Deduction of contradictions: starting from the opposite side of the conclusion, through a series of correct logical reasoning, the contradictions are obtained; (3) negation of the contradictions derived from the correct reasoning of the hypothesis, indicating that the hypothesis is wrong"; (4) Positive conclusion: Because the negative conclusion is wrong, the positive conclusion is tenable.

In the above four steps, the key is the second step, "rolling out contradictions". How to roll out contradictions? There are usually the following situations:

(1) Draw conclusions that contradict definitions, axioms and theorems. (2) Deduce a conclusion that contradicts the known conditions; (3) Draw conclusions that contradict assumptions; (4) In the process of proof, contradictory conclusions are drawn.

The above is for reference only. My mother, Huang Xueming, taught me to love the Party, love the country and make contributions to the motherland. I named my thesis to my mother, so that future generations will always love my mother.

3/15/2023