Beal's Conjucture

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Abstract: This idea gives a path to make new proofs using this method.Namely to prove Fermats last theorem in simple and general way and it links the number theory and linear algebra.

1 Introduction

Beal's Conjecture is a conjucture in number theorey formulated in1993 while investigating generalizations of Fermat's Last theorem set forth in 1997 as a Price problem by the united states of America's dalls,Texas number theorey enthusiast and billionaire banker, Mr. Daniel Andrew Beal.
Beals conjecture states that : The equation $A^x + B^y = C^z$—(1)
if A,B,C,x,y,z are integers with all exponents (x,y,z) greater than 2 then the bases A,B,C must share a common prime factor.In otherwords if A,B,C are relatively prime then the equation (1) as no solution.

2 theorem

Statement:The equation $x^l + y^m = z^n$ has no solution when x,y,z are relatively prime and l,m,n are integer greater than 2.
Proof:—- Assume, $az - by = x, cx - dy = z, ex - fz = y$ then we going to write these equation in the form of matrix as A= $\begin{pmatrix} 1 & b & -a \\ -c & d & 1 \\ -e & 1 & f \end{pmatrix}$ X= $\begin{pmatrix} x \\ y \\ z \end{pmatrix}$ B= $\begin{pmatrix} 0 \\ 0 \\ 0 \end{pmatrix}$ then AX=B—(2).

now, we get determinant of A we get zero. with simplification we obtain
$df + bcf + ac = be + aed + 1$—-(3)
Consider
$(az^2 - by^2)x^2 + (bx^2 - cz^2)y^2 = (ax^2 - cy^2)z^2$
Here,take $az^2 - by^2 = x$,$bx^2 - cz^2 = y$ and $ax^2 - cy^2 = z$ then we get $x^3 + y^3 = z^3$—(4) it has no solution in euler's proof.
by our assumption,replace a,b,e,f,c,d as az,by,bx,cz,ax,cy then by equation (3) we get $c^2yz + a^2zx = b^2yx + 1$ —-(5) by comparing with equation (4) we have no solution where x,y,z are relatively prime. If we replace y by y^r, z by z^s and x by x^t (in assumption replacement) where r,s,t are greater than 1 then by equation(5) we get no solution.becouse it still relatively prime with each other.so we conclude that $x^l + y^m = z^n$ has no solution where x,y,z are relatively prime and

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for all integer l,m,n greater than 2.
Hence the proof.

3 Conclusion

This proof concludes that every beal's conjucture pattern conjuctures can be solvable using matrix metheds.

4 Refferences

1.Zhang Yue's Fermat's last theorem for n=3.https://www.mathematicaljournal.com.
2.linear differential equation wikipedia. https://en. wikipedia.org