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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.**

I. 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 conjucture 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.

II. 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 $A = \begin{bmatrix} 1 & b & -a \\ -c & d & 1 \\ -e & 1 & f \end{bmatrix}$ $X = \begin{bmatrix} x \\ y \\ z \end{bmatrix}$ $B = \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}$ then AX=B (2).

now, we get determinant of A we get zero.with simpli cation 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 equa- tion(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 for all integer l,m,n greater than 2. Hence the proof.

III. CONCLUSION

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

REFERENCES

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