Expanded Set of Conjectures Like Beal Conjecture

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Abstract

The Beal Conjecture came with an idea of an expanded fresh set of conjectures.

1. Introduction

Andrew Beal, a Dallas banker, has formulated a conjecture [1] which can generalise the Fermat's last theorem (FLT).

After a study on this Conjecture, the present author has formulated another set of conjectures, such as,

Conjecture 1 *The equation $X^a + Y^b = Z^c$ has no solution in positive integers X, Y, Z, a, b, and c, with $a, b, c > 2$, if X and Y have a common factor but each of them separately coprime with Z, or at least any one of X and Y is coprime with Z.*

and,

Conjecture 2 *Let X, Y, Z, a, b, and c be positive integers, with $a, b, c > 2$. If X and Y coprime but each of them separately has common factor with Z, or at least any one of X and Y has common factor with Z, then $X^a + Y^b = Z^c$.*

These two conjectures are more challengeable than Beal Conjecture. We may combine both the Conjectures into a Generalized form, such as:

Conjecture 3 *Let X, Y, Z, a, b, and c be positive integers, with $a, b, c > 2$. Whether X and Y have a common factor or not, the equation $X^a + Y^b = Z^c$ has a solution if each of X and Y has common factor with Z; and $X^a + Y^b = Z^c$ has no solution if each of X and Y separately coprime with Z. If at least any one of X and Y is coprime with Z, then $X^a + Y^b = Z^c$ has a solution if X and Y coprime; and $X^a + Y^b = Z^c$ has no solution if X and Y have a common factor.*

Hopefully, any solution of the **Conjecture 3**, immediately give you to the solution of Beal Conjecture.

By the way, the present author have the solution of Beal Conjecture by using Fermat's method of infinite descent as basic, which can help to prove all of the above Conjectures properly. Unfortunately, continuing the Fermat's tradition, the present author is **bad enough** to keep his proof hidden and unpublished so that others can try to find the proof in their own way. Just forget it that he has any proof ever, then you obviously reach a different direction of the thoughts, which will lead us to another set of sophisticated and robust conjectures, we hope.

References

[1] R. D. Mauldin, *Notices Am. Math. Soc.* **44** (1997) 1436.