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Research Article

BEAL CONJECTURE DISPROVED WITH COUNTEREXAMPLE THEORY

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Abstract

Simple integers like 13, 7 and 8 can be used to disprove Beal conjecture. We show Beal conjecture is false through counterexample.

INTRODUCTION

Simple integers like 13, 7 and 8 can be used to disprove Beal conjecture. We show Beal conjecture is false through counterexample.

RESULTS

Here I show 4 counterexamples and 1 proof example

[1]. $13^2 + 7^3 = 8^3$
$169 + 343 = 512$

There are no common prime factors. Two of the numbers are prime; the third number 8 is not prime. 8 is a composite number. 8 does not share common prime factors with 13 and 7.

[2]. 3 imaginary number i^3 +4 imaginary number i^3= 7 imaginary number i^3

-3 i + -4 i = -7 i

There is No Common prime factor seen in this example.

[3]. 3 imaginary number i^4 + 4 imaginary number i^4. = 7 imaginary number i^4

$3i^4 + 4i^4 = 7i^4$

There is no common prime factor seen in this example

[4]. An example involving integer 0 which can be seen as a positive integer as 0 is not negative. Some versions of the conjecture ask for non-negative integers

$0^5 + 0^5 = 0^5$

[5]. One example that supports the conjecture is

Common prime factor^3 + Common prime factor^3 = Common prime factor ^{3}

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Even with a proof case, counterexamples show the overall theory as false.

DISCUSSION

As we showed in our results

$13^2 + 7^3 = 8^3$
$169 + 343 = 512$

There are no common prime factors. Two of the numbers are prime; the third number 8 is not prime. 8 does not share prime factors with 13 and 7.

The 2 exponent above the 13 can be seen as greater than 3 as finishing 2nd in a class or 2nd in a race is seen as doing better than finishing 3rd in a race.

With no common prime factors, a simple counterexample shows Andrew Beal's conjecture to be false as numbers involved do not have to have common prime factors.

Let us talk about our proof case study-

Common prime factor^3 + Common prime factor^3 = Common prime factor ^{3}

Even with a proof case study, such as

$2^3 + 2^3 = 2^4$

the 2 is not really common. The 2 is particular to the first, second or third integer Not really a common prime factor.

Many counterexamples show the overall theory as false. There can be an infinite number of counterexamples using 0. This proof example can still be seen as false as the common prime factor is never really common to every integer, but only common to a specific integer-first integer, second integer or third integer

Any proof example that can be shown would be false as the factors are only specific to a particular integer (1st, 2nd or 3rd integer) not to all of the integers in a case study. Proofs will always be false as common prime factors are arguably not really common.

Conclusion

Beal Conjecture is false as counterexample theory shows no need to have common prime factors. 13, 7, 8 are one of a number of examples that can be used to disprove the Beal conjecture.

Another counterexample is

$0^5 + 0^7 = 0^9$

as 0 can be seen as a positive or non-negative integer. Mathematical conjectures can be disproved and proved at the same time. Examples that support the conjecture exist as well, but one counterexample can be seen as a disproof as the theory in general is not totally and absolutely true.

REFERENCES

1. Imaginary numbers were discovered by Renee Descartes and others showing imaginary number or $i^2 = -1$

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