The Twin Power Conjecture

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Abstract

We consider a new conjecture regarding powers of integer numbers and more specifically, we are interesting in existence and finding pairs of integers: $n \geq 2$ and $m \geq 2$, such that $n^m = m^n$.

Keywords: integers; power; exponentiation

1 Introduction

Exponentiation is a mathematical operation, written as n^m, involving two numbers, the base n and the exponent or power m. When m is a positive integer, exponentiation corresponds to repeated multiplication of the base: that is, n^m is the product of multiplying m bases.

We consider a new conjecture regarding powers of integer numbers and more specifically, we are interesting in existence and finding pairs of integers: $n \geq 2$ and $m \geq 2$, such that $n^m = m^n$.

For $n = 2$ and $m = 4$ we have: $2^4 = 4^2 = 16$. So at least one such pair of powers does exist.

Let us fix integer number $n \geq 2$. Is there at least one integer $m \geq 2$, such that $n^m = m^n$?

We conjecture that for any $n \geq 2$ it does exist.

2 The Twin Power Conjecture

Let us formulate our Conjecture(The Twin Power Conjecture**)**.

Conjecture(The Twin Power Conjecture). *For any integer* $n \geq 2$ *there exists at least one integer* $m \geq 2$, *such that* $n^m = m^n$.

At least, it would be interesting to prove or disprove this conjecture and to develop general theory regarding existence and computation of such pairs of powers.

References

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