The Twin Power Conjecture

Yuly Shipilevsky

Toronto, Ontario, Canada
E-mail address: yulysh2000@yahoo.ca

Abstract

We consider a new conjecture regarding powers of integer numbers and more specifically, we are interested 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 interested 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 a general theory regarding existence and computation of such pairs of powers.

**References**

