A Diophantine binomial inequality*

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For all positive integers x, y, and n, the binomial $(x+y)^n$ has the integer root $((x+y)^n)^{\frac{1}{n}} = z \in \mathbb{Z}$, $(x+y=z)$;
all positive integers with integer roots of the same power can be expressed as a binomial (emphasis on *all*).

The expression

$$(x+y)^n \neq x^n + (x+y)^n$$

is an inequality.

Having established *all integers with an integer root* for a given n can be expressed as $((x+y)^n)^{\frac{1}{n}} = z \in \mathbb{Z}$, it *follows* from the inequality that

$$(x^n + (x+y)^n)^{\frac{1}{n}} \notin \mathbb{Z}$$

for n>2.

This expression is equivalent to Fermat's Last Theorem stating that no three positive integers x, y, and z satisfy the equation $z^n = x^n + y^n$ for any integer value of n greater than two.

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*this is a refined argument for a previous demonstration