# Why Fermat had (probably) no proof?

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## Introduction

Fermat in 1637 stated that:

> It is impossible to separate a cube into two cubes, or a biquadrate into two biquadrate, or in general any power higher than the second into the power of like degree; I have discovered a truly remarkable proof which this margin is too small to contain." (Dickinson (1938))

This theorem is now known as Fermat's last theorem and it formally says the following.

**Theorem 0.1** (Fermat's last theorem)**.** *Let $n \geq 3$ be an integer. The equation*

$$x^n + y^n = z^n$$

*has no non-trivial solutions $x, y, z \in \mathbb{Z}$.*

Dickinson, L. J. 1938. *History of the Theory of Numbers.* New York: Chelsea Publishing Company.