Title	Fermat's Last Theorem
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Abstract

Fermat's Last Theorem (FLT) states that there are no ***natural*** numbers A, B, C, and n such that $A^n = B^n + C^n$ is true for n>2.

The proposition was first stated as a theorem by Pierre de Fermat around 1637 in the margin of a copy of Arithmetica:

https://en.wikipedia.org/wiki/Arithmetica

Fermat added that he had a proof that was too large to fit in the margin and because he had done likewise for other since-proved theorems there has since been a search to find a short proof.

This effort examines the attributes of the numbers in FLT and shows that irrational numbers are required for it to be true.

Proof

Required basic knowledge about surds and irrational numbers is here:
https://www.mathcentre.ac.uk/resources/uploaded/mc-ty-surds-2009-1.pdf **(*)**

Consider the natural numbers A, B, C and n where A>B>C and n>2.
Assume all common factors have been removed so that B or C or both are odd.
If they were both even A would also be even and powers of the number 2 could be . divided throughout

The following table shows the possible combinations if FLT ***is*** true.

E(ven) O(dd)

A	B	C	B−C
E	O	O	E
O	O	E	O
O	E	O	O

Assume FLT is true.

Then $A^n = B^n+C^n$

$= (B^n-C^n)+2C^n$

$= 2((B^n-C^n)/2+C^n)$

giving $A = 2^{(1/n)}*((B^n-C^n)/2+C^n)^{(1/n)}$

Thus A is the product of 2 numbers both of which are nth roots.
According to (*) these are irrational and therefore so is A.

The conclusions are: the theorem is true and the margin probably ***wasn't*** big enough.