# Are there simple proofs of Fermat's last theorem?

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**Abstract**
Beside rigorous proofs of Fermat's last theorem, there are relatively simple approaches to arrive at the same conclusion. One of the simple proofs is by Pogorsky, available at http://vixra.org/abs/1209.0099.

**Introduction**
This article is summary of discussion via researchgate.net. It is intended to stimulate further discussion. Beside rigorous proofs of Fermat's last theorem, there are relatively simple approaches to arrive at the same conclusion. One of the simple proofs is by Pogorsky, available at http://vixra.org/abs/1209.0099. There is also a website called www.fermatproof.com which gives an alternative proof, and also a review paper by P. Schrorer at : http://www.occampress.com/fermat.pdf.
Another numerical experiment was performed by me around eight years ago (2006), which showed that if we define k=(a^n+b^n)/c^n, where a,b,c are triplets corresponding to Pythagorean triangle (like 3,4,5 or 6,8,10), then k=1 if only if n=2. It seems that we can generalize the Fermat's last theorem not only for n>2 but also for n<2. But of course my numerical experiment is not intended to be a rigorous proof. Our paper is available at http://vixra.org/pdf/1404.0402v1.pdf, based on 2006 version article.

**Answers:**
[1] **John Dossey**
There are no simple proofs at this point.

[2] **Christopher Landauer**
In my opinion, the description on fermatproof.com is not a proof - it depends on pictures of intuitive properties of geometry that are not justified and likely not true in the generality needed - this is one of the two most common erroneous proof methods we have seen over the last 350 years

also, computer studies have taken the possibilities up to very large numbers without a solution (as the proof by Wiles shows there cannot be)

on the other hand, it is widely (if not universally) surmised that the proof fermat thought he had relied on a property (unique factorization) of integers that does not hold in the algebraic number systems used in the proofs (there is a very short pseudo-proof of the theorem that depends on the unique factorization, reachable at the college number theory level) - this is the other common incorrect proof

none of this is trying to argue that there cannot be a short proof, but the number of smart people who have tried to find one leads me to think that we need some more basic theory first

a similar example holds in finite group theory - the odd order proof (no finite non-commutative simple groups have odd order) was 255 pages long when it was first published, but now, with the

systematization of the methods invented in that paper, and the widespread use of them for other problems in group theory, the proof can be reduced to 20 or 30 pages (and made simple enough to be checked by a computer proof assistant) - perhaps something analogous will happen with fermat's theorem

[3] **Victor Christianto**
Thank you, Christopher, for your answer. Does it mean that someday we can expect that there will be shorter proofs on Fermat last theorem? Best wishes

[4] **Christopher Landauer**
I do expect one, though you have to remember that we waited 340 years for the first proof, so patience is warranted.

[5] **Fabio Mainardi**
"Beside rigorous proofs of Fermat's last theorem": can a proof be not rigorous? A proof is rigorous, or it is not a proof at all. I wrote my PhD thesis on a topic related to FLT, and I haven't yet read any elementary proof of it. Which doesn't mean, of course, that such a proof doesn't exist.

**Concluding remarks**
In the present time there is no simple proof for Fermat's Last Theorem, but it seems that we can expect to have one in the future.

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