



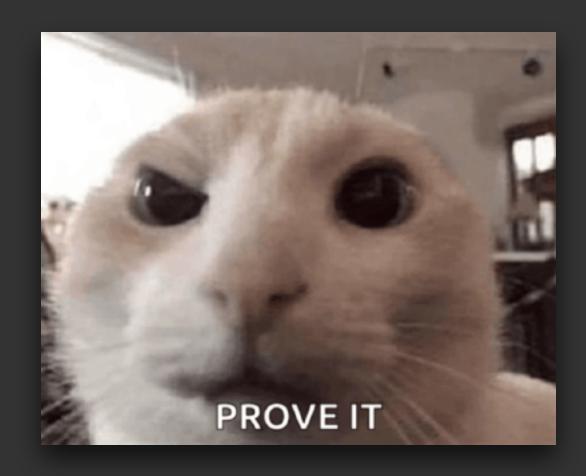
our first proof (by construction)



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Theorem

For all integers n, if n is even, then n^2 is even.



Proof.

- Pick an arbitrary even integer n: we want to show that n^2 is even
- Since n is even, there is some integer such that n=2k
- This means that $n^2 = (2k)^2 = 4k^2 = 2(2k^2)$
- From this we see that there is an integer m (namely $2k^2$) where $n^2=2m$
- Therefore n^2 is even, which is what we wanted to show.