

WMU Math Club

Math Challenge Problem

December 2023

The Problem.

Determine all positive integers n such that $n^4 + 4^n$ is prime.

Instructions.

1. Solve the problem.
2. Type your solution to the problem, preferably in $\text{T}_{\text{E}}\text{X}/\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$.
3. Email your solution to `david.richter@wmich.edu` with the phrase “December Challenge Problem” in the subject field before January 1, 2024.

More Information. If you submit the best solution, explained clearly and completely (and succinctly), then your solution will be posted on the WMU Math Club bulletin board next month, you will be recognized as the winner during the next meeting of the WMU Math Club, and you will receive a prize (probably a book). All undergraduate and graduate students may submit solutions. Do not submit more than one solution; every submission after your initial submission will be ignored. Please include your name in your write-up. Please make contact with Prof. David Richter if you have any questions.

Report from November 2023. Two undergraduate students submitted correct solutions, and there were no other submissions. The solution submitted by Mr. Cooper Smalldon was judged as the best.