MATH PROBLEM OF THE WEEK

Spring 2023

Problem 8

Fermat's little theorem. If a is an integer coprime to n then

$$a^{\varphi(n)} \equiv 1 \mod n,$$

where $\varphi(n)$ is the Euler's totient function.

Use the result above to identify $3^{2023^{2023}}$ **mod 7**.

We welcome solutions from everyone. The undergraduate participant from the NMSU main campus with the most correct solutions at the end of the semester will receive an award of $500.

Solutions must be mathematically rigorous and originally obtained by the participants.
Participants will be notified if their solutions are correct within a week.

Deadline: Monday, April 24, 10 am

Next problem will be posted on April 24

Send solutions to: mathpotw@nmsu.edu

More information at: https://math.nmsu.edu/activities/math-problem-of-the-week.html