MATH PROBLEM OF THE WEEK

Fall 2022

Problem 8

Suppose there is a special **atom** that splits every second into two **atoms**, both identical to the original **atom**. One is placed to the right, and the other to the left, both at a unit distance from the original **atom**. However, when two **atoms** collide, they destroy each other. Thus, after two seconds there are two **atoms**, after three seconds there are four **atoms**, after four seconds there are two **atoms**, and so on. Then how many **atoms** are there after 132122 seconds?

HINT: $132122 = 2^{17} + 2^{10} + 2^4 + 2^2 + 2$.

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, November 28, 10 am

This is the last problem for Fall 2022 and carries points equivalent to three problems . We will return in February 2023.

Send solutions to: mathpotw@nmsu.edu

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