MATH PROBLEM OF THE WEEK

Fall 2021

Problem 6

For a positive integer n, let t_n be the number of positive divisors of n. Prove that

$$t_1 + t_2 + \cdots + t_n = \left\lfloor \frac{n}{1} \right\rfloor + \left\lfloor \frac{n}{2} \right\rfloor + \cdots + \left\lfloor \frac{n}{n} \right\rfloor.$$

Note: Here $\lfloor x \rfloor$ denotes the floor function, that is, the largest integer N such that $N \leqslant x$.

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.

Deadline: Monday, November 1, 10 am