# MATH PROBLEM OF THE WEEK

**Fall 2021**

## Problem 9

Let $f$ be a positive and continuous function that satisfies $f(x+1) = f(x)$ for every real number $x$. Prove the following inequality

$$\int_0^1 \frac{f(x)}{f(x + \frac{1}{2})}\, dx \geqslant 1.$$

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 29, 10 am**