



# MATH PROBLEM OF THE WEEK

Spring 2023

## Problem 6

Let  $f : \mathbb{Z}^+ \rightarrow \mathbb{Z}^+$  be a map between positive integers such that it is strictly increasing (i.e.  $f(x+1) > f(x)$ ) and

for all positive integers  $x$ ,  
one of  $f(x)$  and  $f(f(x))$   
the remain

$$f(f(x)) = 3x$$

for all positive integers  $x$ . Find  $n$  for which  $f(n) = 56$ . Justify your answer.

**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 10, 10 am**

Next problem will be posted on April 10

**Send solutions to: [mathpotw@nmsu.edu](mailto:mathpotw@nmsu.edu)**

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