

UT Math Club Problem of the Month

January 26, 2010

Problem I Does there exist a monotonically (strictly) increasing sequence of non-negative integers, $a_1 < a_2 < a_3 < \cdots$, such that $a_{mn} = a_n + a_m$ for all natural numbers $m, n \geq 1$? Prove your claim.

Problem II Find all polynomials $p \in \mathbb{R}[x]$ satisfying the equation $p(x + 1) = p(x) + 2x + 1$.

Submission Deadline: Thursday, February 23rd by 11:59 PM. Submission guidelines and other rules can be found at:

http://www.ma.utexas.edu/mathclub/mpc/mpc_rules_f09.pdf