

## Bilkent University Department of Mathematics

## PROBLEM OF THE MONTH

Term: April 2010

Let  $a_1, a_2, \ldots$  be a non-constant arithmetic progression consisting of natural numbers. Suppose that for some n,  $\sqrt[2010]{a_n}$  is rational. Prove that for some m,  $\sqrt[3]{a_m}$  is rational but  $\sqrt[2]{a_m}$  is irrational.