



Bilkent University  
Department of Mathematics

## PROBLEM OF THE MONTH

**Term:** May 2011

Suppose that  $f(x) = ax^2 + bx + c$ , where  $a, b$  and  $c$  are positive real numbers. Show that for all nonnegative real numbers  $x_1, x_2, \dots, x_{1024}$

$$\sqrt[1024]{f(x_1) \cdot f(x_2) \cdots f(x_{1024})} \geq f(\sqrt[1024]{x_1 \cdot x_2 \cdots x_{1024}}).$$