**Bilkent University
Department of Mathematics**

PROBLEM OF THE MONTH

Term: October 2015

Prove that for all positive real numbers a, b, c satisfying $a^2 + b^2 + c^2 + 2abc \leq 1$, the following inequality holds:

$$\frac{1}{a} + \frac{1}{b} + \frac{1}{c} \geq \frac{a}{b} + \frac{b}{c} + \frac{c}{a} + 2(a + b + c).$$