

# RESEARCH GROUP IN MATHEMATICAL INEQUALITIES AND APPLICATIONS

## PROBLEM CORNER

### Problem 3, (2009)

**Y.N. Aliyev**

Department of Mathematics,  
Faculty of Pedagogy, Qafqaz University,  
Khyrdalan AZ0101, Azerbaijan

Email: yakubaliyev@yahoo.com

Received: 01 December, 2008

---

**Open Problem.** Let  $n > 1$ ,  $x_1, x_2, \dots, x_n > 0$ , and  $\sum_{i=1}^n x_i = 1$ . For each  $n$  find all possible values of the parameter  $\lambda$  for which the inequality

$$\sum_{i=1}^n \frac{1}{x_i} \geq \frac{\lambda}{1 + n^{n-2}(\lambda - n^2) \prod_{i=1}^n x_i},$$

is always true.

**Remark.** Special cases  $n = 3$  and  $n = 4$  have been discussed in [1] and [2].

### References

- [1] Y. N. Aliyev, Problem 11199, *Amer. Math. Month.*, **113**(1), (2006), 80; Solution: **114**(7), (2007), 649.
- [2] Y. N. Aliyev, The Best Constant For An Algebraic Inequality, *J. Inequal. Pure and Appl. Math.*, **8**(2), (2007), Art. 79, 6 pp.