

# RESEARCH GROUP IN MATHEMATICAL INEQUALITIES AND APPLICATIONS

## PROBLEM CORNER

### Problem 10, (2009)

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**Conjecture.** Let  $P$  be an interior point of the non-obtuse triangle  $ABC$ , then

$$\cos \angle 1 \cos \angle 2 + \cos \angle 3 \cos \angle 4 + \cos \angle 5 \cos \angle 6 \leq \frac{9}{4},$$

$$\cos \angle 6 \cos \angle 3 + \cos \angle 2 \cos \angle 5 + \cos \angle 4 \cos \angle 1 \leq \frac{9}{4}.$$

where  $\angle 1 = \angle PBC$ ,  $\angle 2 = \angle PCB$ ,  $\angle 3 = \angle PCA$ ,  $\angle 4 = \angle PAC$ ,  $\angle 5 = \angle PAB$ ,  $\angle 6 = \angle PBA$ .

