



Bilkent University  
Department of Mathematics

## PROBLEM OF THE MONTH

**Term:** September 2005

Suppose that  $0 \leq x_1, x_2, \dots, x_{10} \leq \frac{\pi}{2}$  and

$$\sin^2 x_1 + \sin^2 x_2 + \dots + \sin^2 x_{10} = 1.$$

Prove that

$$\frac{\cos x_1 + \cos x_2 + \dots + \cos x_{10}}{\sin x_1 + \sin x_2 + \dots + \sin x_{10}} \geq 3.$$