Bilkent University
Department of Mathematics

Problem Of The Month

Term: March 2009

Let $x_i, i = 1, 2, \ldots, 2009$ be real numbers satisfying

$$\sum_{i=1}^{2009} \frac{1}{x_i^2 + 1} = 2008.$$

Find the maximum of the expression $\sum_{(i,j)} x_i x_j$, where the summation is taken over all pairs (i, j) : $i, j = 1, 2, \ldots, 2009$; $i > j$.