

Weekly Problem Competition

Friday, November 6, 2009

Let a_1, a_2, \dots, a_n be positive real numbers that satisfy the following inequality

$$(a_1^2 + a_2^2 + \dots + a_n^2)^2 > (n - 1)(a_1^4 + a_2^4 + \dots + a_n^4)$$

for some $n \geq 3$. Prove that any three of the numbers a_i 's are edges of some triangle.

Remarks:

The rules and results of the competition can be found at <http://www.math.iit.edu/~weeklyproblem>

You have to submit the solution by email, to weeklyproblem@math.iit.edu

Please feel free to tell any IIT undergraduate student about the competition.

**Thank you for your participation
Good Luck !**