Friday, February 22, 2013

Let $x_1, \ldots, x_n \in (0, \infty)$, and denote by $S = x_1 + x_2 + \ldots + x_n$. Prove that

$$\frac{S}{S - x_1} + \frac{S}{S - x_2} + \cdots + \frac{S}{S - x_n} \geq \frac{n^2}{n - 1}.$$ 

Find necessary and sufficient conditions for $x_i$’s such that the above inequality is an identity.

Join the competition!

The Department of Applied Mathematics and IIT SIAM Student Chapter is organizing a weekly campus-wide math competition for undergraduate students.

▷ Every Friday 3pm, visit http://math.iit.edu/~weeklyproblem to view the problem of the week
▷ Submit the solution to weeklyproblem@math.iit.edu by Wednesday 5pm
▷ The author(s) of the first correct solution(s) will receive a monetary prize

For more details view the official web site http://math.iit.edu/~weeklyproblem.

Become a Math Club member and receive the problem by email.

Good Luck! Have fun and enjoy Mathematics!