Problema săptămânii 2778

Se consideră numerele reale pozitive $a_1, a_2, \ldots, a_n$, unde $n \geq 3$, astfel încât

$$a_1 + a_2 + \ldots + a_n = \frac{1}{a_1} + \frac{1}{a_2} + \ldots + \frac{1}{a_n}.$$

Demonstraţi că

$$\sum_{i<j} a_i a_j \geq \frac{n(n-1)}{2}.$$

Problem of the week no. 278

Positive real numbers $a_1, a_2, \ldots, a_n$, where $n \geq 3$, satisfy

$$a_1 + a_2 + \ldots + a_n = \frac{1}{a_1} + \frac{1}{a_2} + \ldots + \frac{1}{a_n}.$$

Prove that

$$\sum_{i<j} a_i a_j \geq \frac{n(n-1)}{2}.$$