

Let $n \geq 3$ and let x_1, x_2, \dots, x_n be nonnegative real numbers. Define $A = \sum_{i=1}^n x_i$, $B = \sum_{i=1}^n x_i^2$ and $C = \sum_{i=1}^n x_i^3$. Prove that

$$(n+1)A^2B + (n-2)B^2 \geq A^4 + (2n-2)AC.$$