

Proposed problem to Mathematical Reflections

Statement

Let a, b, c be real numbers. Prove that

$$3(abc)^2 + 3 \sum_{\text{cyc}} (a^4b^2 + a^2b^4) \geq 3abc \sum_{\text{cyc}} a^3 + 4 \sum_{\text{cyc}} a^3b^3 \geq 0$$