

# R M M

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*If  $a, b, c \geq 0$  then:*

$$\sum a^4(a^4 - b^4)(b^2 + c^2)c^4 \geq 0$$

*Proposed by Daniel Sitaru-Romania*

*Solution by Soumava Chakraborty-Kolkata-India*

$$\begin{aligned} \sum a^4(a^4 - b^4)(b^2 + c^2)c^4 &\geq 0 \Leftrightarrow \\ \Leftrightarrow \sum a^8b^2c^4 + \sum a^6b^8 &\geq 2 \sum a^6b^4c^4 \Leftrightarrow \\ \Leftrightarrow \sum b^2c^4(a^4 - b^2c^2)^2 &\geq 0 \end{aligned}$$

*Equality holds for  $a^2 = bc, b^2 = ca, c^2 = ab \Leftrightarrow a + b + c = 0$  or  $a = b = c$*

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