ROMANIAN MATHEMATICAL MAGAZINE

$$If\ \ a,b,c>0\ \ and\ \ a+b+c=3\ \ Prove\ that:$$

$$\sum_{cyc}\frac{a^3}{a+b+1}\ge 1$$

Proposed by Kostantinos Geronikolas-Greece

Solution by Mirsadix Muzefferov-Azerbaijan

$$\sum_{cyc}\frac{a^3}{a+b+1}\overset{CBS}{\ge}\frac{(a+b+c)^3}{3(a+b+1+b+c+1+c+a+1)}=$$

$$=\frac{3^3}{3(2(a+b+c)+3)}=\frac{27}{3(2\cdot 3+3)}=1$$

$$Equality\ \ holds\ \ if\ \ only\ \ if:\ \ a=b=c=1$$