

Also solved by ARKADY ALT, San Jose, CA, USA; GEORGE APOSTOLOPOULOS, Messolonghi, Greece; CAO MINH QUANG, Nguyen Binh Khiem High School, Vinh Long, Vietnam; CHIP CURTIS, Missouri Southern State University, Joplin, MO, USA; OLIVER GEUPEL, Brühl, NRW, Germany; JOHN G. HEUVER, Grande Prairie, AB; WALTHER JANOUS, Ursulinengymnasium, Innsbruck, Austria; SALEM MALIKIĆ, student, Sarajevo College, Sarajevo, Bosnia and Herzegovina; DUNG NGUYEN MANH, High School of HUS, Hanoi, Vietnam; CRISTINEL MORTICI, Valahia University of Târgoviște, Romania; PAOLO PERFETTI, Dipartimento di Matematica, Università degli studi di Tor Vergata Roma, Rome, Italy; ALBERT STADLER, Herrliberg, Switzerland; PETER Y. WOO, Biola University, La Mirada, CA, USA; and the proposer.

For positive α Janous proved the generalization

$$\sum_{i=1}^n \frac{a_i}{a_i + \alpha a_{i+1}} \geq \min \left\{ \frac{n}{1 + \alpha}, 1 \right\}.$$

3380. [2008 : 430, 433] Proposed by Mihály Bencze, Brasov, Romania.

Let $a, b, c, x, y,$ and z be real numbers. Show that

$$\begin{aligned} & \frac{(a^2 + x^2)(b^2 + y^2)}{(c^2 + z^2)(a - b)^2} + \frac{(b^2 + y^2)(c^2 + z^2)}{(a^2 + x^2)(b - c)^2} + \frac{(c^2 + z^2)(a^2 + x^2)}{(b^2 + y^2)(c - a)^2} \\ & \geq \frac{a^2 + x^2}{|(a - b)(a - c)|} + \frac{b^2 + y^2}{|(b - a)(b - c)|} + \frac{c^2 + z^2}{|(c - a)(c - b)|}. \end{aligned}$$

Similar solutions by Arkady Alt, San Jose, CA, USA; and Michel Bataille, Rouen, France.

Let

$$\begin{aligned} u &= \sqrt{\frac{(a^2 + x^2)(b^2 + y^2)}{(c^2 + z^2)(a - b)^2}}; & v &= \sqrt{\frac{(b^2 + y^2)(c^2 + z^2)}{(a^2 + x^2)(b - c)^2}}; \\ w &= \sqrt{\frac{(c^2 + z^2)(a^2 + x^2)}{(b^2 + y^2)(c - a)^2}}. \end{aligned}$$

Then

$$uv = \sqrt{\frac{(b^2 + y^2)^2}{(a - b)^2(b - c)^2}} = \frac{b^2 + y^2}{|(a - b)(b - c)|},$$

and similarly

$$uw = \frac{a^2 + x^2}{|(a - b)(c - a)|}; \quad vw = \frac{c^2 + z^2}{|(b - c)(c - a)|}.$$

The original inequality now follows from the well-known inequality

$$u^2 + v^2 + w^2 \geq uv + uw + vw.$$

Also solved by GEORGE APOSTOLOPOULOS, Messolonghi, Greece; ŠEFKET ARSLANAGIĆ, University of Sarajevo, Sarajevo, Bosnia and Herzegovina; CHIP CURTIS,