ROMANIAN MATHEMATICAL MAGAZINE

If $a, b > 0$ then:

$$4\left(\frac{a^2}{b+1}+\frac{b^2}{a+1}\right)+3\left(\frac{1}{a}+\frac{1}{b}\right)\geq 10$$

Proposed by Nguyen Hung Cuong-Vietnam

Solution by Tapas Das-India

$$4\left(\frac{a^2}{b+1}+\frac{b^2}{a+1}\right)+3\left(\frac{1}{a}+\frac{1}{b}\right)\geq 10\ or,$$

$$\frac{4(a+b)^2}{a+b+2}+\frac{3(1+1)^2}{a+b}\geq 10\ (Bergstrom)\ or,$$

$$\frac{4x^2}{x+2}+\frac{12}{x}\overset{a+b=x>0}{\geq} 10\ or,$$

$$2x^3-5x^2-4x+12\geq 0\ or,$$

$$(x-2)^2(2x+3)\geq 0\ true.$$

$$Equality\ for\ \ a=b=1$$