**In acute $\triangle ABC$ holds:**

$$\sum \sin A + \sum \tan A \geq \frac{9\sqrt{3}}{2}$$

*Proposed by Nguyen Hung Cuong-Vietnam*

*Solution by Tapas Das-India*

$$Let\ be\ f(x) = \sin x + \tan x\ ,\ x \in \left(0, \frac{\pi}{2}\right)$$

$$f''(x) = \sin x\,(2\sec^3 x - 1) > 0\ as\ \sec x > 1\ ,f\ is\ convex.$$

$$f(A) + f(B) + f(C) \overset{Jensen}{\geq} 3f\left(\frac{A+B+C}{3}\right) = 3f\left(\frac{\pi}{3}\right) =$$

$$= 3\left(\sin\left(\frac{\pi}{3}\right) + \tan\left(\frac{\pi}{3}\right)\right) = 3\left(\frac{\sqrt{3}}{2} + \sqrt{3}\right) = \frac{9\sqrt{3}}{2}$$

$$\sum \sin A + \sum \tan A \geq \frac{9\sqrt{3}}{2}$$

$$Equality\ for\ A = B = C = \frac{\pi}{3}$$