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In ΔABC the following relationship holds:

$$\sum_{cyc}\frac{cotB+cotC}{sinA}\geq 4$$

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Solution by Mirsadix Muzefferov-Azerbaijan

$$\frac{cot(B)+cot(C)}{\sin(A)}=\frac{\frac{\cos(B)}{\sin(B)}+\frac{\cos(C)}{\sin(C)}}{\sin(A)}=\frac{\sin(B)\cos(C)+\sin(C)\cos(B)}{\sin(A).\sin(B).\sin(C)}=$$

$$=\frac{\sin(B+C)}{\sin(A).\sin(B).\sin(C)}=\frac{1}{\sin(B).\sin(C)}$$

$$\sum_{cyc}\frac{1}{\sin(B).\sin(C)}=\frac{\sin(A)+\sin(B)+\sin(C)}{\sin(A).\sin(B).\sin(C)}=\frac{\frac{s}{R}}{\frac{F}{2R^2}}=\frac{2sR^2}{FR}=\frac{2sR}{sr}=\frac{2R}{r}\overset{Euler}{\geq}4$$

$$Equality\ \ holds\ \ for: A=B=C$$