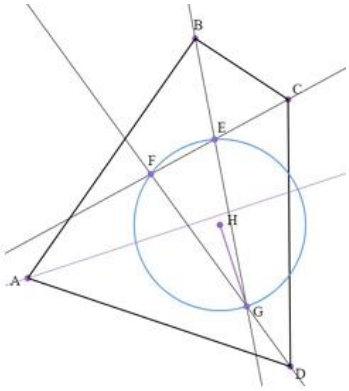
Example 1 84 : As shown in Figure 1, AK, BE, CF, DG are the bisectors of the four interior angles of quadrilateral $ABCD$ respectively, and H is $\triangle$the circumcenter of EFG. *Prove:* $AK \perp HG$.



$$\left(\frac{A-K}{H-G}\right)^2\left(\frac{F-E}{F-G}\frac{G-H}{G-E}\right)^2\frac{\dfrac{A-B}{A-K}\dfrac{E-G}{B-A}\dfrac{C-B}{E-F}\dfrac{G-F}{D-C}}{\dfrac{A-K}{A-D}\dfrac{B-C}{E-G}\dfrac{E-F}{C-D}\dfrac{D-A}{G-F}}=1,$$