parallel and perpendicular

Example 86 : As shown in Figure 1, $\triangle$in ABC, O is the circumcenter, BD and CE are high, prove that $AO \perp DE$.

$$\frac{A-O}{D-E}=\frac{\dfrac{A-O}{A-B}\dfrac{B-D}{B-C}\dfrac{A-B}{C-E}}{\dfrac{B-D}{B-C}\dfrac{E-D}{E-C}},$$