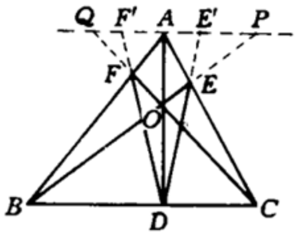

Example 54 : As shown in the figure, it is known that AD is the height of the acute angle $\triangle ABC$, O is any point on AD, connect BO, CO and extend AC, AB to E, F *respectively*, and connect DE, DF. Prove: $\angle EDA = \angle FDA$.

Proof: Suppose $O=\dfrac{xA+yB+zC}{x+y+z}$, $D=\dfrac{yB+zC}{y+z}$, $E=\dfrac{xA+zC}{x+z}$, $F=\dfrac{xA+yB}{x+y}$,

solve the equation

$$k_1\left(\frac{B-C}{A-D}\right)^2+k_2\frac{\dfrac{D-F}{D-A}}{\dfrac{D-A}{D-E}}=k_3$$, available

$$\frac{y^2z^2}{(y+z)^2}\left(\frac{B-C}{A-D}\right)^2+(x+y)(x+z)\frac{\dfrac{D-F}{D-A}}{\dfrac{D-A}{D-E}}=x^2,$$