Example 72 : As shown in Figure 3, in $\triangle ABC$, I is the center, AD is the height, A_1 is the midpoint *of BC*, *and the feet of B* and C on *AI are X and Y* respectively. Prove that Y, A_1, X and D are four points in a circle.

prove:
$$\frac{Y-D}{Y-X}\frac{A_1-X}{A_1-D}=\frac{Y-A}{Y-X}\frac{D-C}{D-A_1}\frac{A_1-X}{C-A}\left(\frac{D-Y}{D-C}\frac{A-C}{A-Y}\right)$$