Example 80 : As shown in Figure 3, for the quadrilateral $ABCD$, four lines drawn from the four corners intersect to form a quadrilateral $A_1B_1C_1D_1$, satisfying $\angle CDA_1 = \angle DAA_1$, $\angle A_1AB = \angle C_1BC$, $\angle ABC_1 = \angle BCC_1$, $\angle C_1CD = \angle A_1DA$, and verifying that the quadrilateral $A_1B_1C_1D_1$ is a quadrilateral inscribed in a circle. $\frac{A-D}{A_1-D_1}\frac{C_1-D_1}{B-C}\frac{C-B}{C_1-B_1}\frac{A_1-B_1}{D-A}\frac{D-C}{A_1-B_1}\frac{A_1-D_1}{A-B}\frac{B-A}{C_1-D_1}\frac{C_1-B_1}{C-D}=\left(\frac{B_1-A_1}{A_1-D_1}\frac{C_1-B_1}{C_1-D_1}\right)^2$