Example 3 : As shown in Figure 1 , in $\triangle ABC$, D is a point on BC. Prove: $AD \perp BC$, $\angle CAD=\angle BAD$, $\angle ABC=\angle ACB$, among these three conditions, if any two are known, the first three.

$$\frac{C-B}{C-A}\frac{A-C}{A-D}\left(\frac{A-D}{B-C}\right)^2=-1,$$
$$\frac{B-A}{B-C}\frac{A-D}{A-B}$$