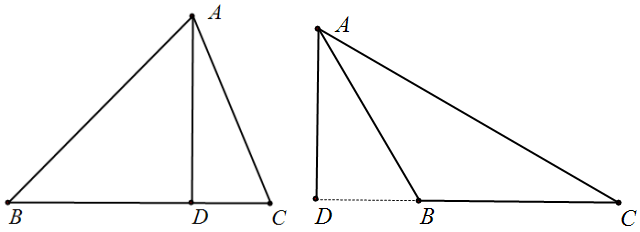
angle relationship

Example 100 : As shown in Figure 4 , in $\triangle ABC$, $AD \perp BC$ is in D, to prove: $BA = BC \Leftrightarrow 2\angle CAD = \angle ABC$.



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