



**Example 63 :** As shown in Figure 1,  $\triangle ABC$ ,  $I$  is the inward point, point  $D$  satisfies  $\angle ABD = \angle BCD$ ,  $\angle DBC = \angle DCA$ , to prove:  $B$ ,  $C$ ,  $D$ , and  $I$  share a circle.

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