



Example 76 : As shown in Figure 3, the quadrilateral $ABCD$, E is a point on the ray DC , if $DA = DB$, $\angle ACD = \angle BCE$, to prove: A, B, C, D four points share a circle.

$$\frac{\frac{A-B}{B-D} \frac{C-D}{C-B}}{\frac{B-A}{D-C}} = \frac{\frac{A-B}{D-B} \frac{A-D}{C-B}}{\frac{D-C}{D-C}},$$

Explanation: This question is very special. The two items on the right side of

the equation $\frac{\frac{A-B}{D-B} \frac{A-D}{C-B}}{\frac{D-C}{D-C}} \in R$ are $\frac{A-B}{C-B} \in R$ the equivalent equations of four points

A, B, C , and D *co-circling*. If the verification conclusion is not established, then the left side of the identity is a real number, and the right side is not a real number, which is a contradiction.