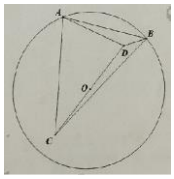
Example 205 : As shown in Figure 1 , A and B are two points on O 0, and O is the midpoint of CD. *Prove* : *The* necessary and sufficient condition for ∠BAD + ∠BAC =90 ° is ∠ABD + ∠ABC =90° . (Huang Libing proposition)



Proof: $\frac{A-D}{A-B}\frac{A-C}{A-B}-\frac{B-D}{B-A}\frac{B-C}{B-A}=2\frac{\frac{A+B}{2}-\frac{C+D}{2}}{A-B}$,

ABCD is parallelogram and P a point inside, such that the midpoint of AD is equidistant from P and C, and the midpoint of CD is equidistant from P and A. Let Q be the midpoint of PB. Show that ∠PAQ = ∠PCQ.