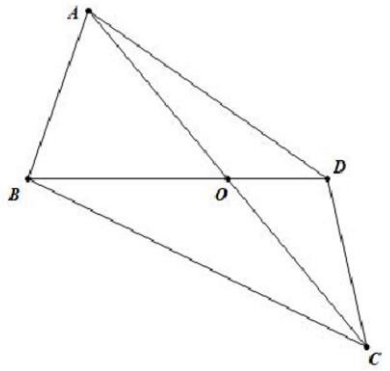
Example 34 : It is known that BD and AC intersect at the point O, $BO=2OD, AO=OC$, $\angle ABD=2\angle ADB$, to prove:

$$\angle BDC=90^{\circ}+\frac{1}{2}\angle CBD.$$



Let $O=0$, $C=-A$, $B=-2D$, $\dfrac{\left(\dfrac{D-(-A)}{D-0}\right)^2}{\dfrac{-2D-0}{-2D-(-A)}}+\dfrac{\dfrac{-2D-A}{-2D-0}}{\left(\dfrac{D-0}{D-A}\right)^2}=2$