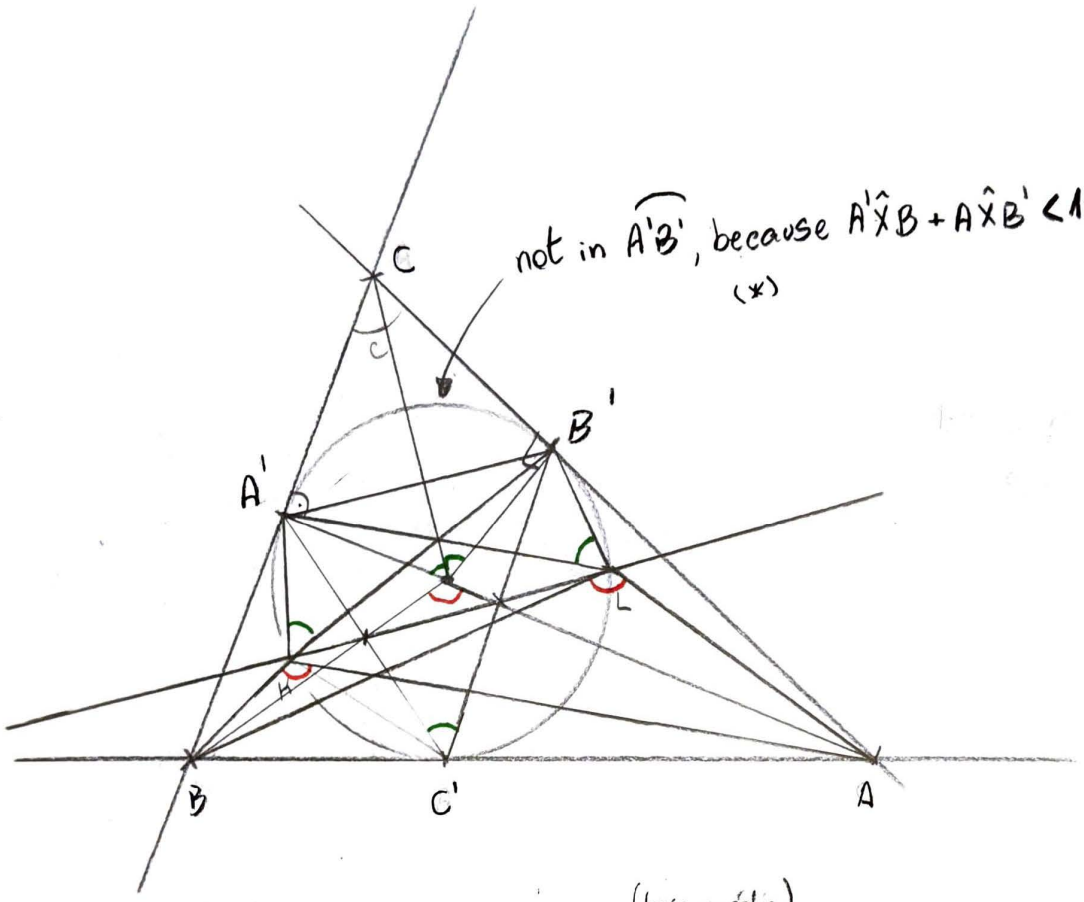
Problema 4 (Geometria/Regis)



(base média)

(*) Thus, we want to prove that KL is the median base.

There's only one point in $\overset{\frown}{A'C'}$ that satisfies it and one point in $\overset{\frown}{C'B'}$ that satisfies it.

$\angle A'KB + \angle AKB' = 180° \Rightarrow \angle A'KB' + \angle AKB = 180°$

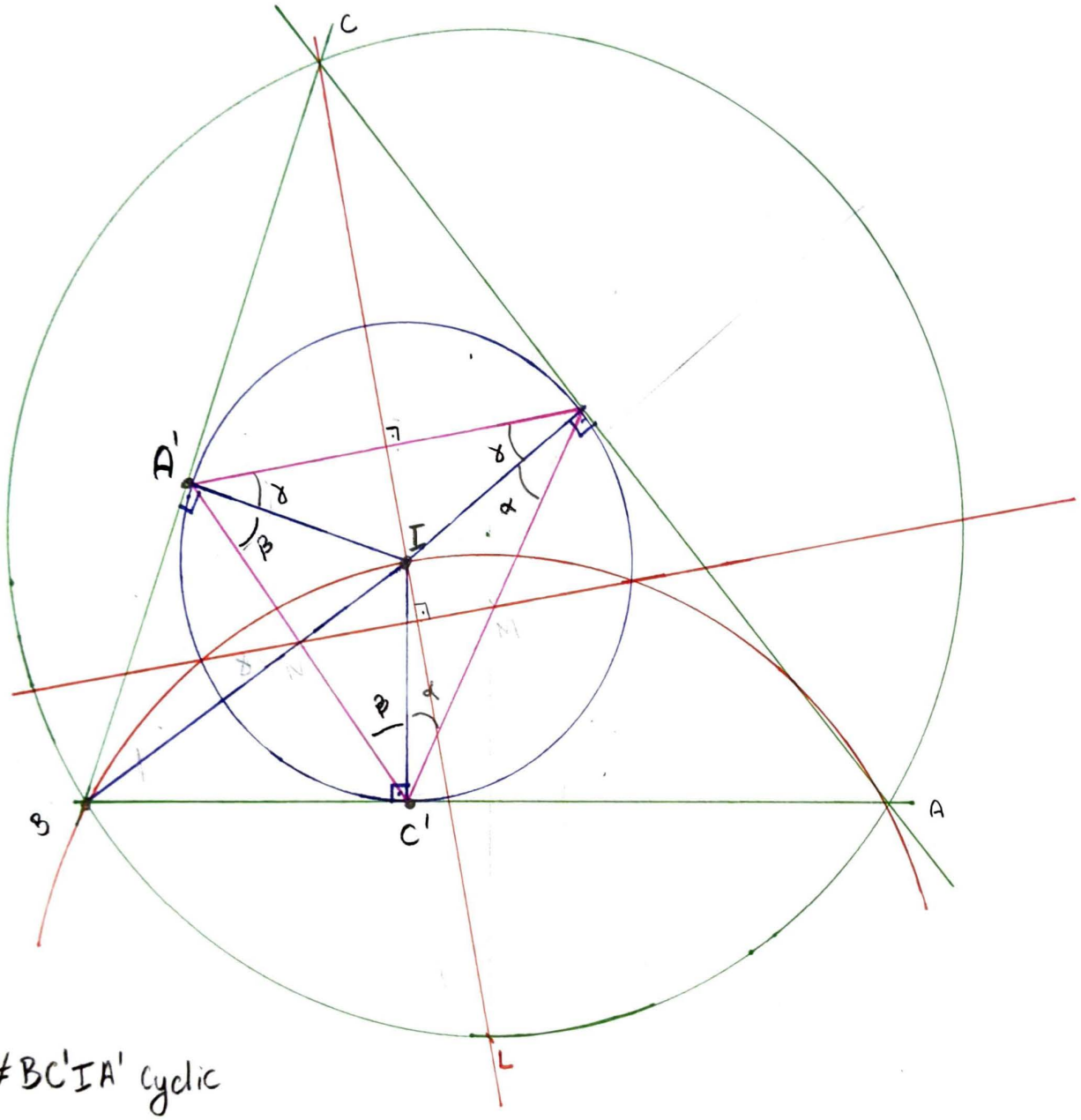
$\angle A'LB + \angle ALB' = 180° \Rightarrow \angle A'LB' + \angle ALB = 180°$

But $\angle A'KB' = \angle A'LB = 90° - C/2$

$\Rightarrow \angle AKB = \angle ALB = 90° + C/2$.

$\Rightarrow$ #AKLB cyclic

But $\angle AIB = 90° + C/2 \Rightarrow$ #AKILB cyclic.



$BC'IA'$ cyclic

Radical center of $(BC'IA')$, $(BKILA)$ and $(A'KC'LB')$. $\Rightarrow$

$\Rightarrow \underbrace{AC' \cap BI}_{\text{midpoint}} \cap LK = N$. $\checkmark \Rightarrow$ LK is the median base