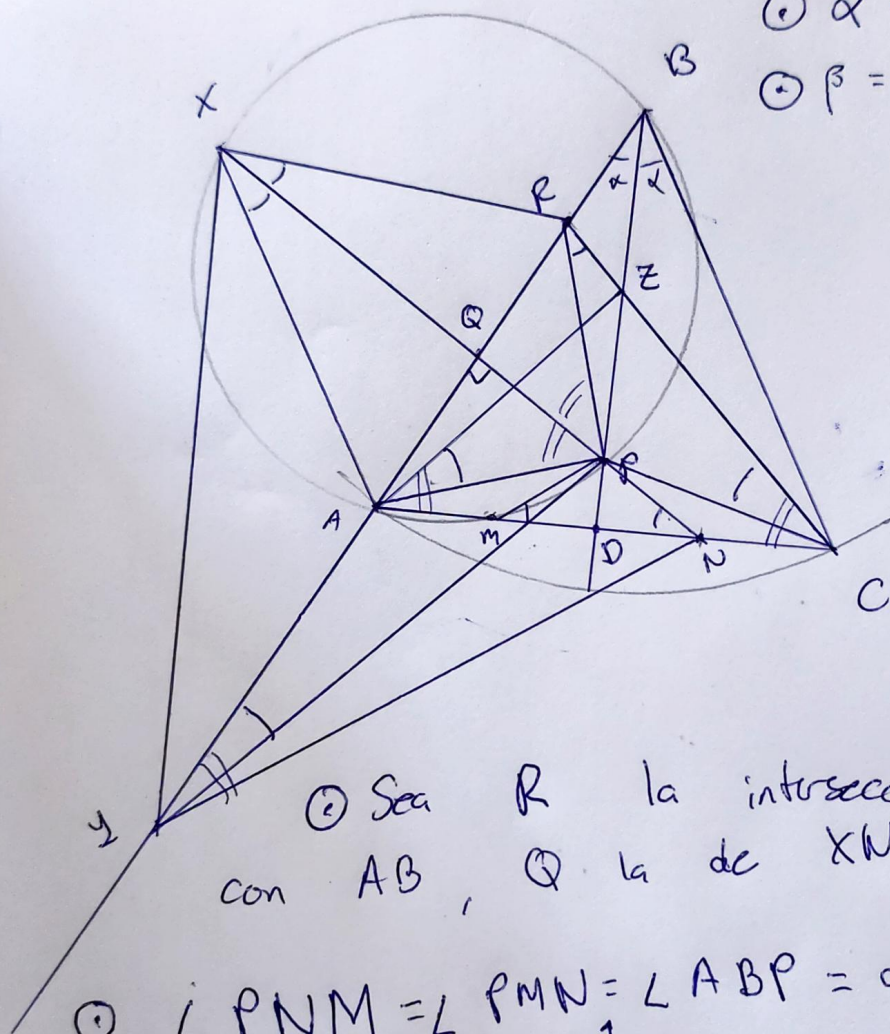


p2 Emmanuel Glogu 1 2

$$\textcircled{1} \alpha = \angle ABD$$

$$\textcircled{2} \beta = \angle ZCA$$



$\textcircled{3}$ Sea R la intersección de CZ con AB , $\textcircled{4}$ la de XN con AB .

$$\textcircled{1} \angle PNM = \angle PMN = \angle ABP = \alpha$$

reflexión BD cíclico ABPM

$$\Rightarrow \angle ZCP = \angle ZAP = \angle RA = \alpha$$

reflexión tangente

$$\angle RBP = \alpha = \angle RCP \Rightarrow \boxed{RB CP \text{ cíclico}}$$

$$\textcircled{1} \angle ZCA = \angle ZAC = \angle AIN = \angle QPA$$

\uparrow rectos \uparrow tangente \uparrow ciclico
 $APN \perp$

$$\textcircled{2} \angle AXP = \angle ABP = \alpha = \angle PNA$$

entonces $AX = AN$

$$\textcircled{3} \angle AQN = 180 - \angle QAN - \angle QNA$$

$$= 180 - (90 - \alpha) - \alpha = 90$$

\uparrow
isocelos

$$\Rightarrow AB \perp XP$$

$$\textcircled{4} \angle RPB = \angle RCB = 90 - \alpha - \beta$$

$$\textcircled{5} \angle RPQ = \angle BPQ - \angle BPR = 90 - \alpha - (90 - \alpha - \beta) = \beta$$

$$\Rightarrow \angle RPQ = \angle QPA$$

\uparrow $R \perp A$

Son rectos respecto a XP.

$$\textcircled{6} \angle RXP = \angle AXP = \alpha = \angle PNA = \angle RYP$$

$$\Rightarrow XRP \perp \text{ciclico}$$

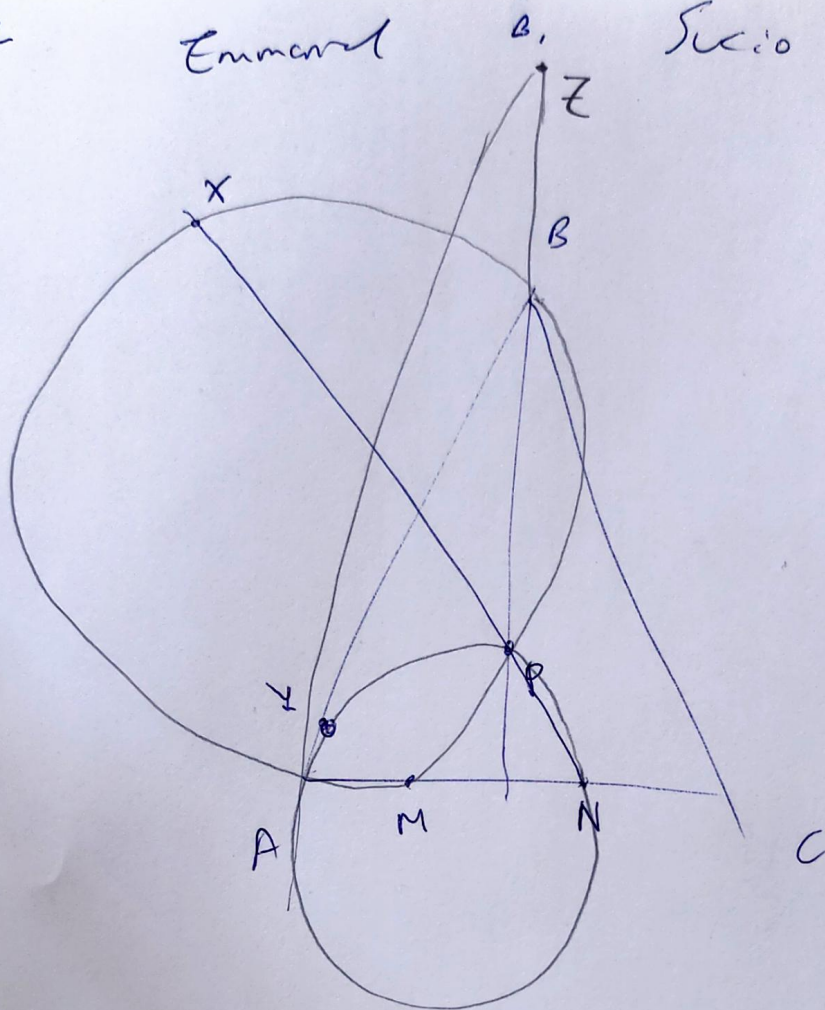
$$\angle CRP = \angle CBP = \alpha = \angle RXP \Rightarrow CR \text{ tangente}$$

a (XYP) y CZ tambien

p2

Emmanuel

Socio 1/6



P2

Emmanuel

B. Samedi 21/6

(on a) $\angle QYA = \angle AYP$ ~~by~~ $\angle XPY \cong \angle Q$
 orthocenter A orthocenter $\angle P$.

$$\angle C^2 = \angle P \cdot \angle R$$

QBDW circle

~~AR || BC~~

Q intersection
 NX on AB

R intersection
 (PAN) on BP
 $\Rightarrow AR = AB = BC$

$\angle AR || BC$

12 sub
 sin imparte
 P.

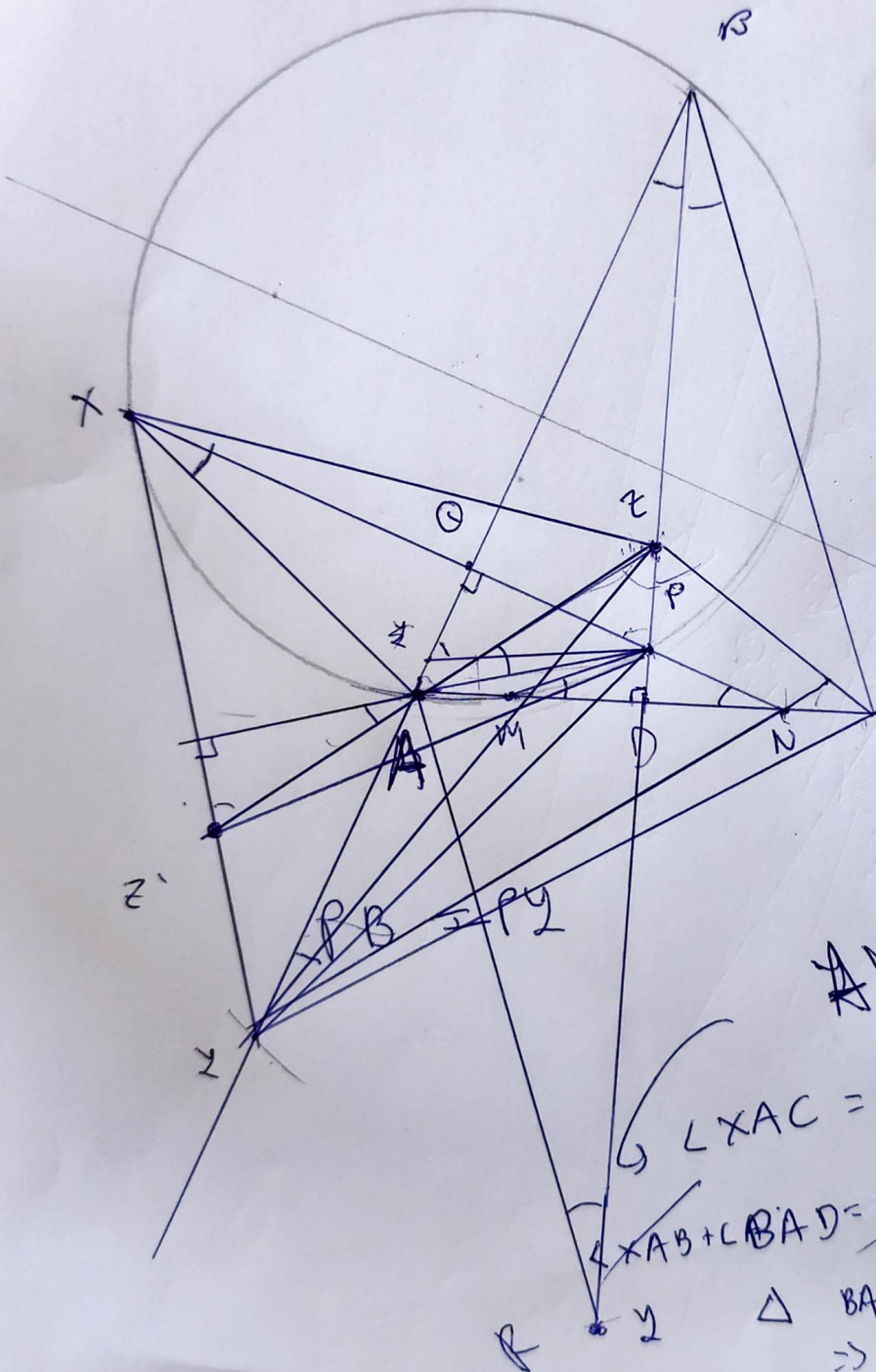
~~AN = AX~~

$$\angle XAC = \angle BPY$$

$$\angle XAB + \angle BAD = \angle XPB + \angle XPY$$

$$\triangle BAD \sim \triangle YPQ$$

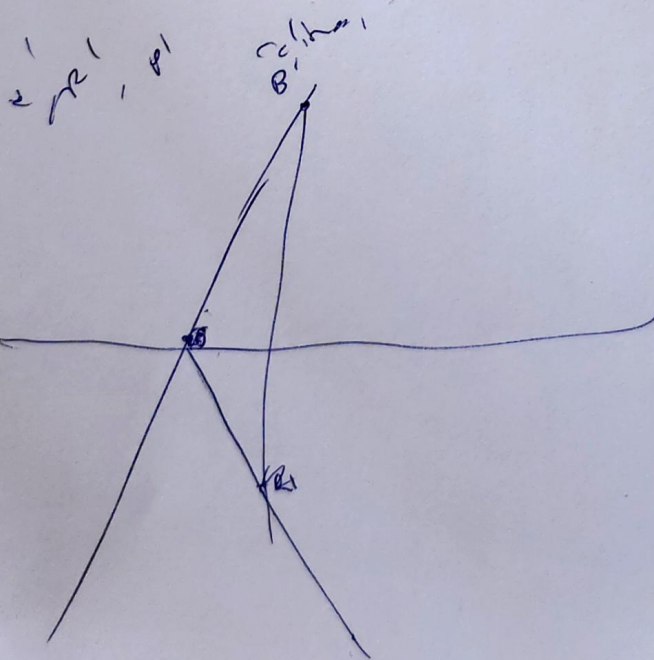
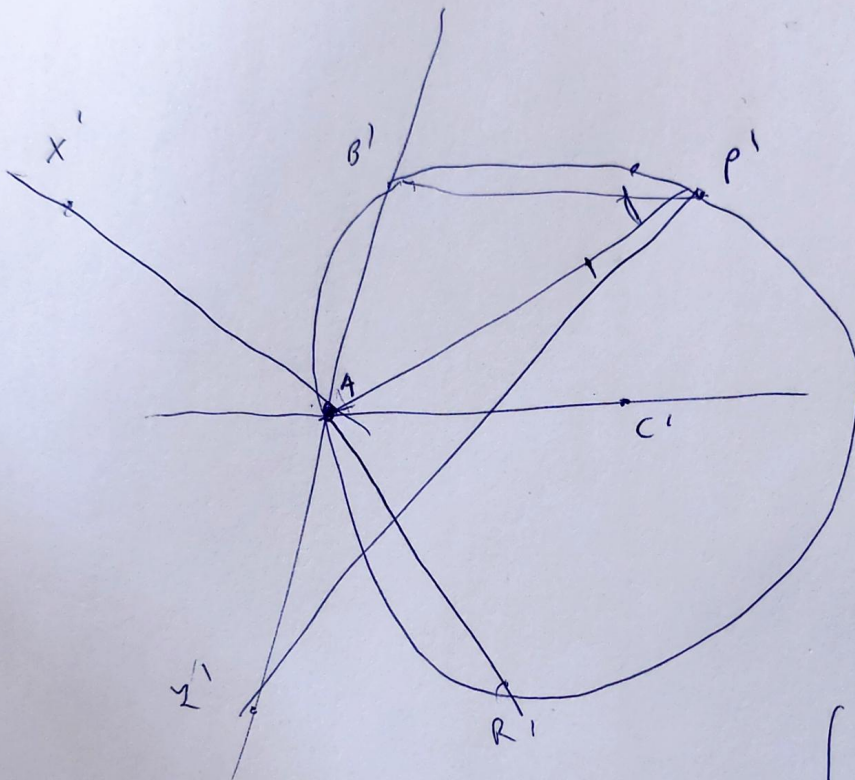
$$\Rightarrow \angle ZQP = 90^\circ$$



p2

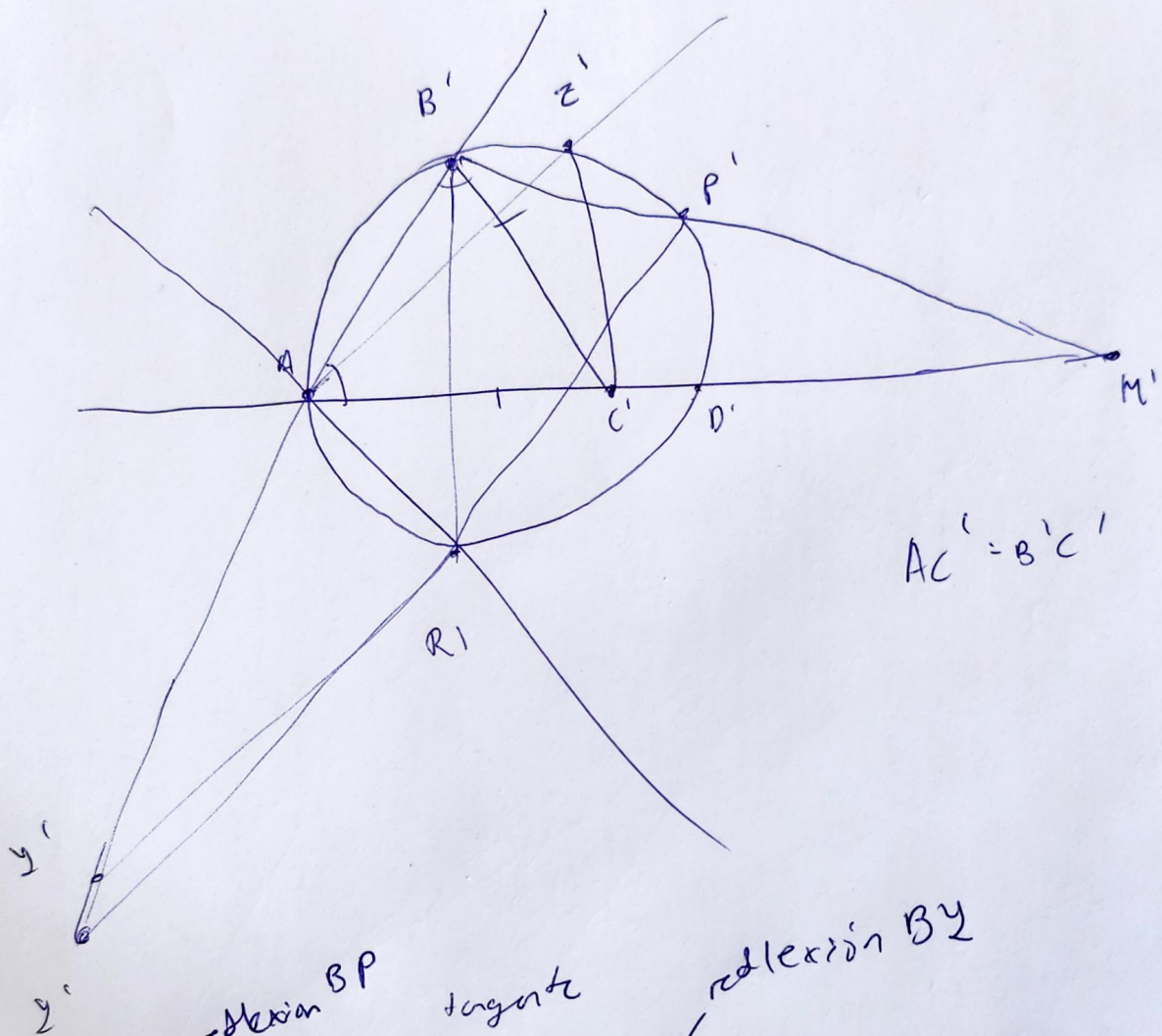
Enunciado B. Seis 3/6

① Inversión desde A



Coro $AB = AR$
 $AB' = AR'$
 $\angle B' R' \perp AC'$

P2 Enunciado B. Seio u1 e



$$AC' = B'C'$$

$\angle ZCA = \angle ZAC = \angle AYW = \angle AXZ = \angle XPA$
 (reflexion BP) (tangent) (reflexion BY)
 A ortocentro $\triangle XYZ$

$$\Rightarrow \angle CZP = 90^\circ - \angle ZCA = 90^\circ - \angle XPA = \angle PXY$$

$\therefore Z$ en ~~(XPY)~~ acerbos.

p2

Examenal B.

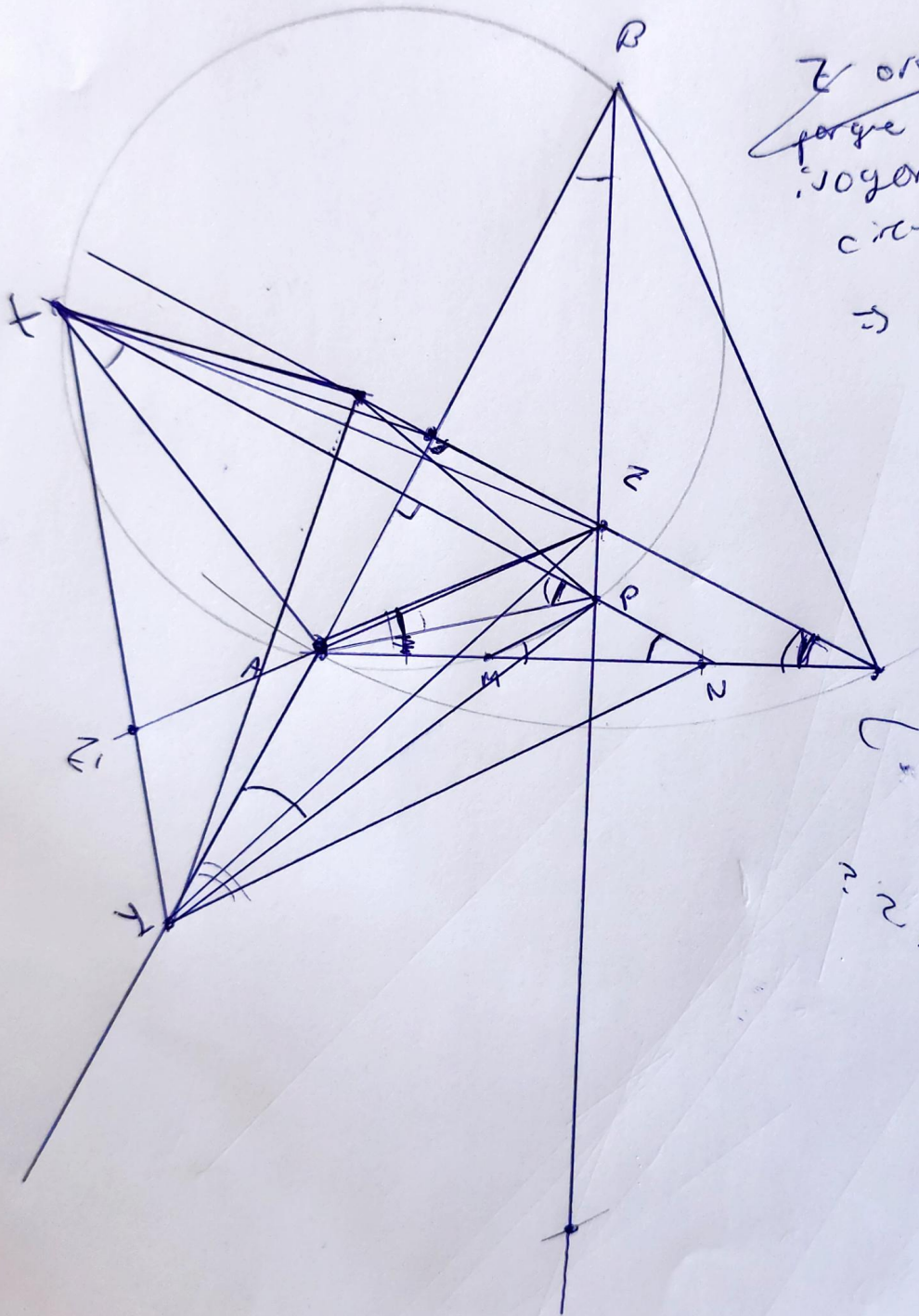
B.

Serie 5 y 6

P ortocentro. A B W.

Z ortocentro ABC
porque es la
simetral del
circunscrito.

$\Rightarrow CZ \parallel XN$.



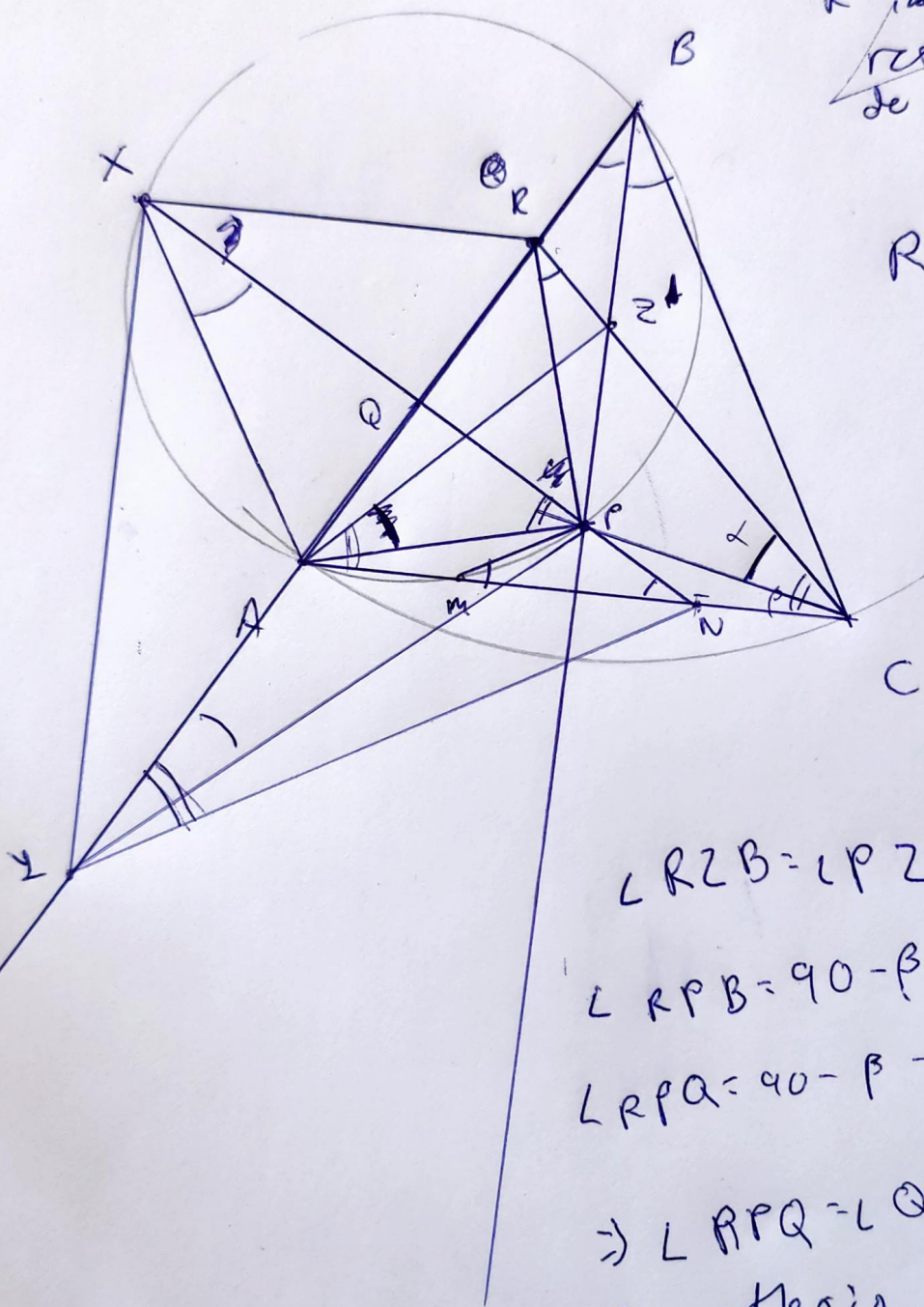
2 2 2 2 2

Sei b, c

R ~~gust~~

reflexión
de Asobun Q.

RBC Paid Co.



$$\angle RZB = \angle PZC = 90^\circ$$

$$\angle RPB = 90^\circ - \beta - \alpha$$

$$\angle RPQ = 90 - \beta - 90 + \beta, \alpha = \alpha$$

$$\Rightarrow LRPQ = LQPA$$

⇒ R relation