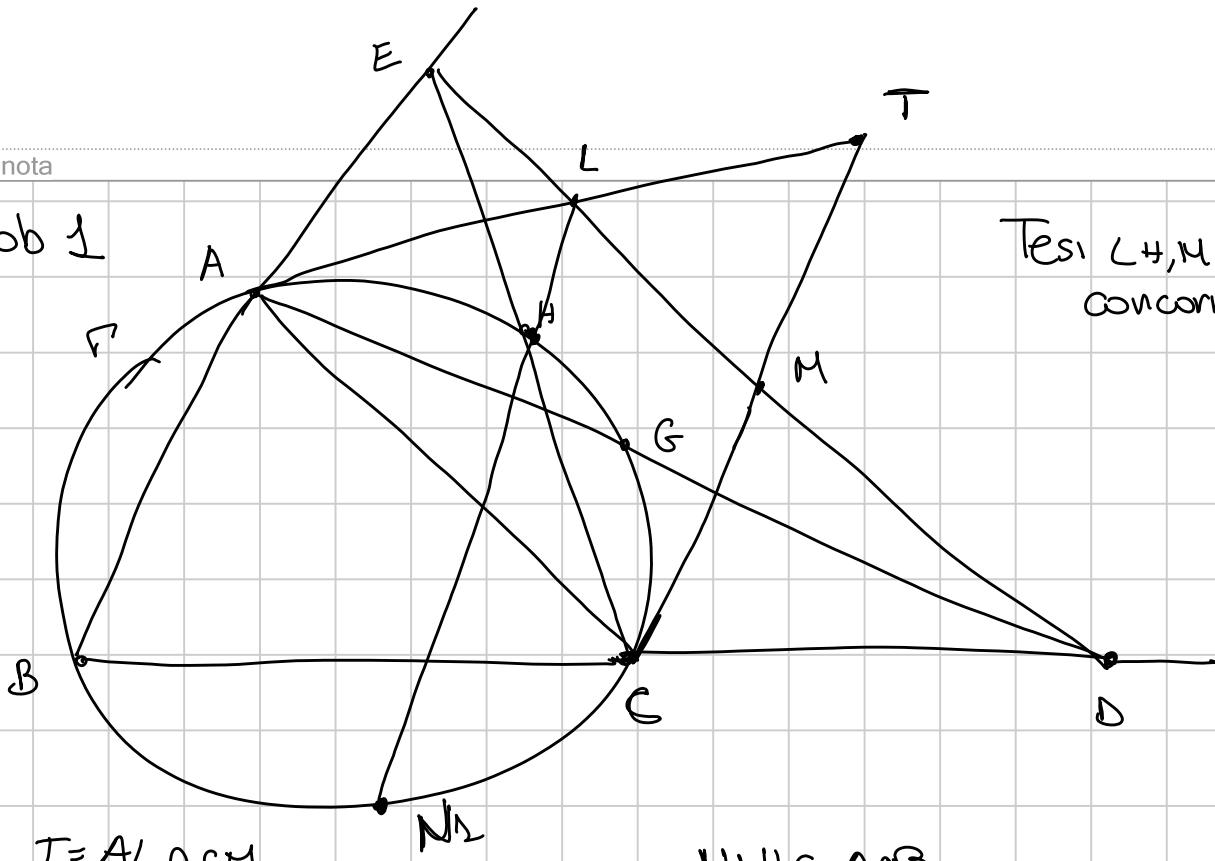


Prob 1

Tesi $\angle H, M_G$
concorrono a Γ



$$T = AL \cap CM$$

$N \perp H \subset A \perp B$

$$\Rightarrow N_{\Delta H} \cap \Delta A = L$$

$$H \subset \cap AB = E$$

$\Rightarrow L_E, N, B, CA$ concorrono

$$N_2 B \cap C A$$

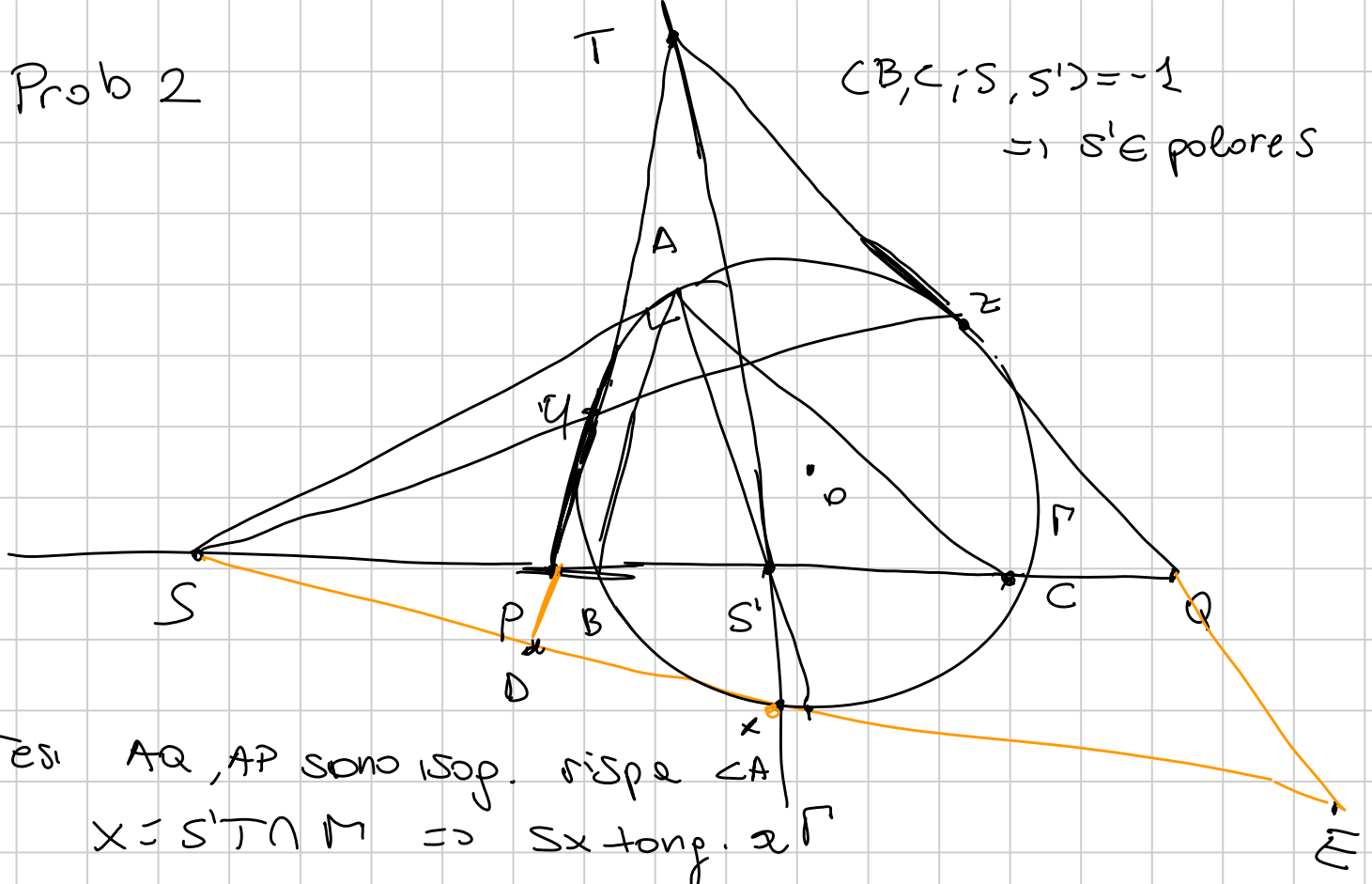
$$K = D \cap CA \Rightarrow N_{\perp}, B, K \text{ all lined,} \Rightarrow N_{\perp} = BK \cap \Gamma$$

$$\Rightarrow N_2 = G \cap M \Rightarrow N_2 = BK \cap \Gamma \Rightarrow N_2 = N_2$$

Prob 2

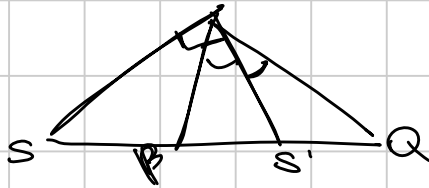
$$\langle B, c; s, s' \rangle = -1$$

$\Rightarrow s' \in \text{polare } s$



Tesi: AQ, AP sono isop. rispe $\angle A$
 $X = S' \cap M \Rightarrow Sx \text{ tang. a } \Gamma$

Tesi $\angle \Rightarrow$



$$(S, S', P, Q) = -1$$

Considero il triangolo $Sx, Ty, Tz \Rightarrow \Gamma$ e e' inscritte

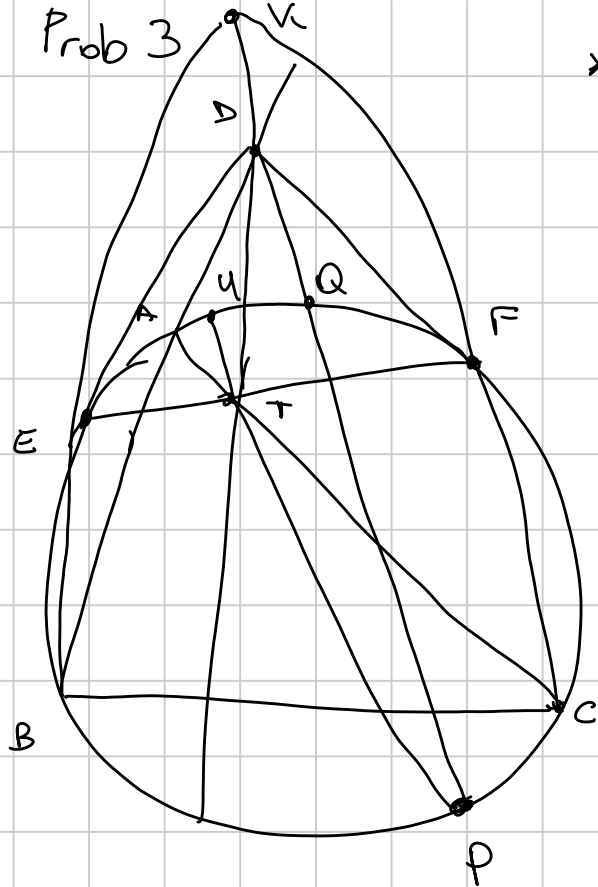
Per la tire $\mathbb{S}^1 \times \mathbb{S}^1$ sulla quale $T \Rightarrow S, y, z$ all'in.

$$(S, x; D, E)_{\text{geo}} = -1 \quad \text{Poiche}$$

TX, DE, CY concentrations

Projekt ab T $-1 = (S, x; D, \varepsilon) = (S, S', P, Q)$

Prob 3



$$x = BQ \cap DT$$

Tesi C, x, y allineati.



Cy, BQ, DT concorrono

Vogliamo trovare un p su DT

$$T = AC \cap EF$$

$$P = EE \cap AB = FF \cap AB$$

$$BEFP \cap CA \Rightarrow K = BE \cap FC$$

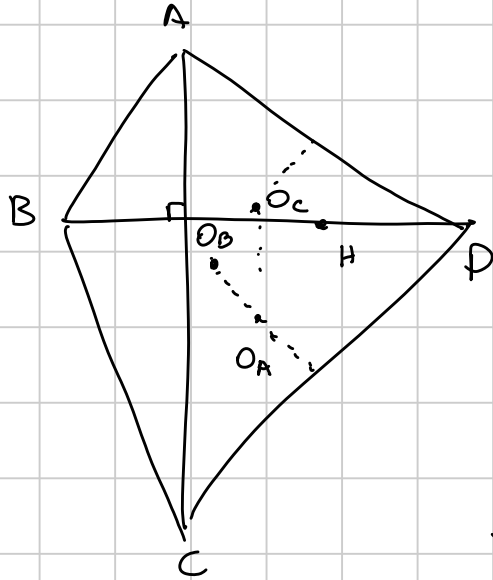
D, T sono allineati

$$x' = BQ \cap CY$$

$$EBQFCY \Rightarrow x', K, \underline{W = QF \cap CY} \text{ sono allineati}$$

$$FQPYEE \Rightarrow W, D, T \text{ allineati}$$

Prob 4



O_C circoc $\triangle ABD$
 O_A circ. di $\triangle BDC$

trasi AO_A , CO_C , le rette di
 eulero di $\triangle ABC$ e $\triangle ADC$
 conc.

retto di eulero di $\triangle ABC \rightarrow O_B H_B$

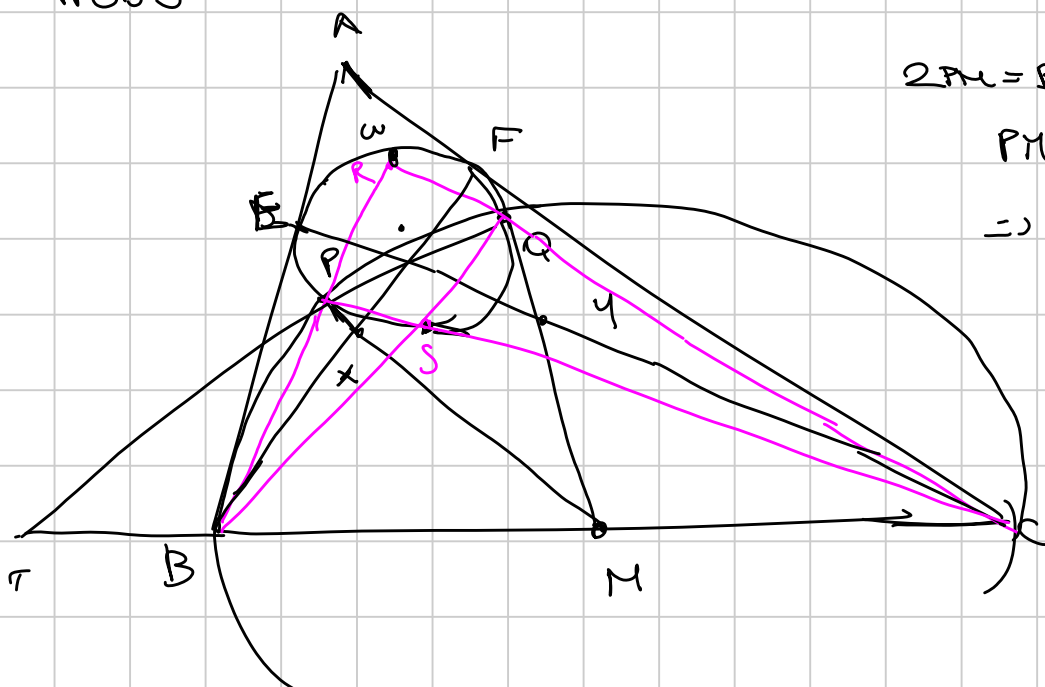
$O_C O_A \parallel AC$ $CH \perp AD$ anche $O_B O_C \perp AD$

$\Rightarrow CH \parallel O_B O_C$ sim. $AH \parallel O_B O_A$

$\Rightarrow \triangle O_A O_B O_C$ e $\triangle A H C$ sono omotetici

$\Rightarrow \exists T$ ~~Q~~ $T \in AO_A, BO_C, O_B H$

Prob 5



$$2PM = BC$$

$$PM = QM = BM$$

$\Rightarrow$ $PQCB$ ciclico con centro M

Γ, ω sono ortogonali

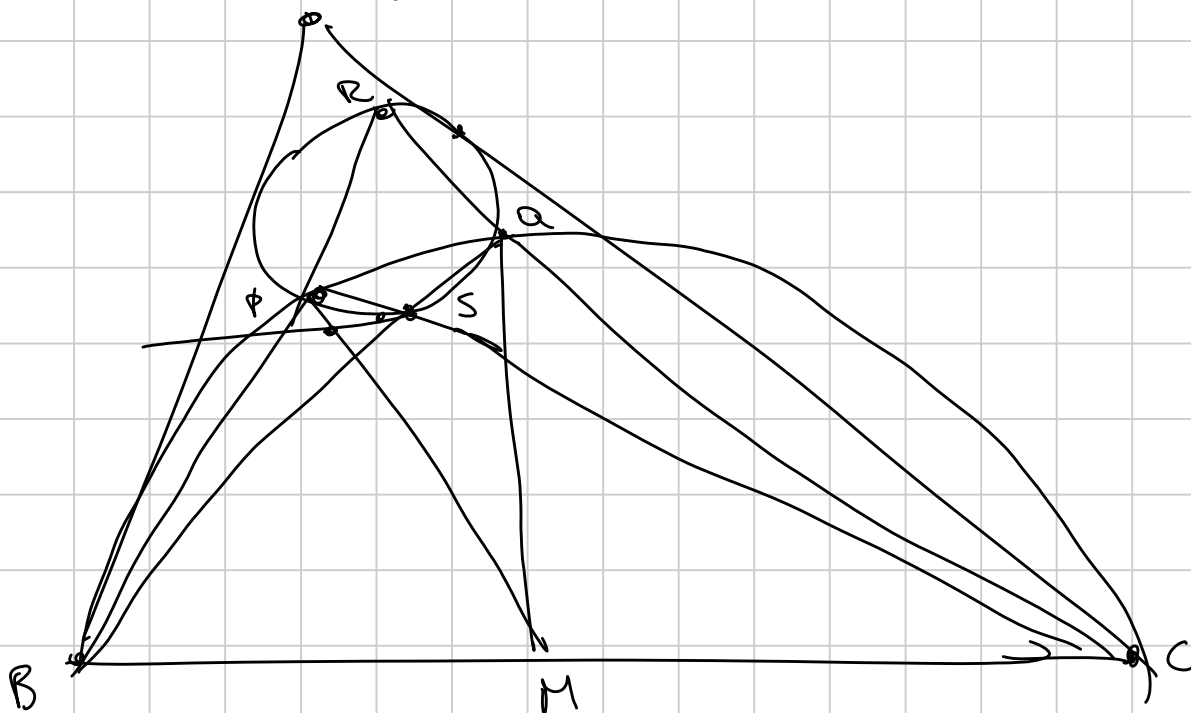
$$R = BP \cap QC, S = BQ \cap PC \Rightarrow$$

$RS \perp BC$ poiché RS è la polare di T rispetto a Γ

$$\angle SQM = \angle BQM = 90^\circ - \angle MAC = 90^\circ - \angle MCQ = \angle SRQ$$

$$R, S \in \omega$$

Claim x tangente a ω



$x' = \text{tangente } S \cap MP \Rightarrow x' \text{ è sulla polare di } C$

per Brocard su $RPSQ \rightarrow F \text{ è sulla polare di } C$
 per Brocard su $RPSQ \rightarrow B \text{ è sulla polare di } C$