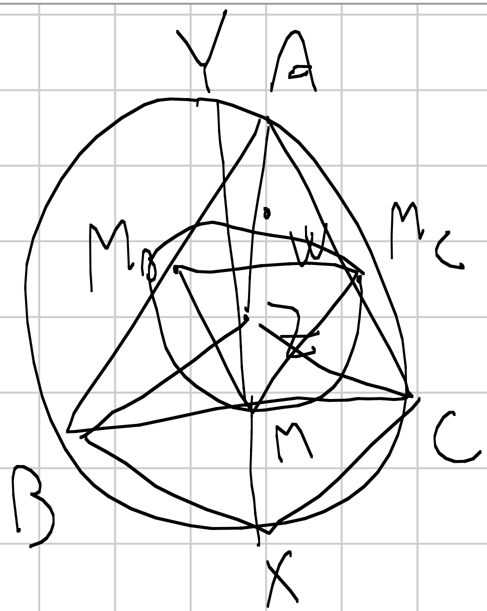
G 1

Titolo nota 24/01/2008



1) $W G T_C$

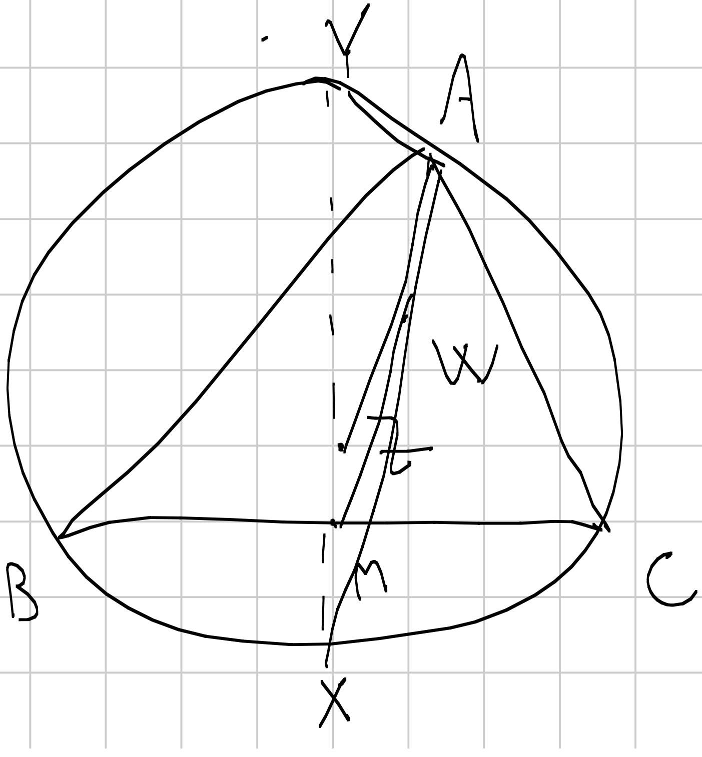
2) $MW \perp AY$

1) $B\hat{X}C = 180 - \alpha \implies B\hat{Z}C = 180 - \alpha$

$M_B \hat{W} M_C = 180 - \alpha \implies W \in \Gamma_F$

$M_B \overset{\Delta}{M} M_Z \sim B \overset{\Delta}{A} C$

2)

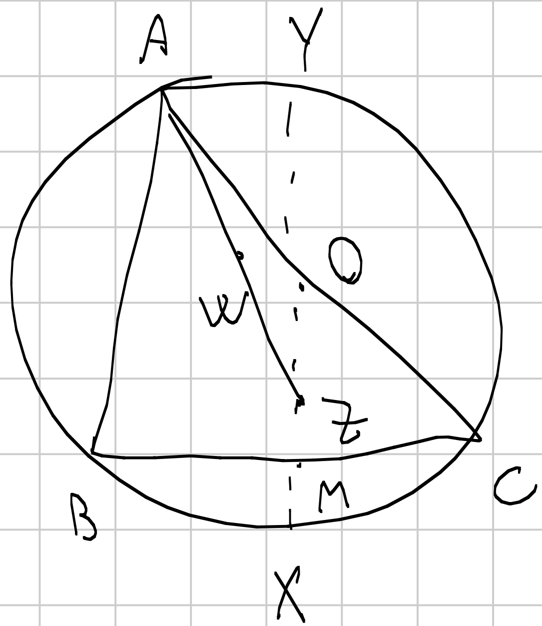


$X\hat{A}Y = 90°$.

Θ_M di centro Z e $K = 1/2$

$MW \parallel AX \Rightarrow MW \perp AY$

1)



$$\vec{Z} = 2\vec{M} - \vec{X}$$

$$\vec{W} = M - \frac{\vec{X}}{2} + \frac{\vec{A}}{2}$$

$$\vec{F} = \frac{\vec{H}}{2} = \frac{\vec{A} + \vec{B} + \vec{C}}{2}$$

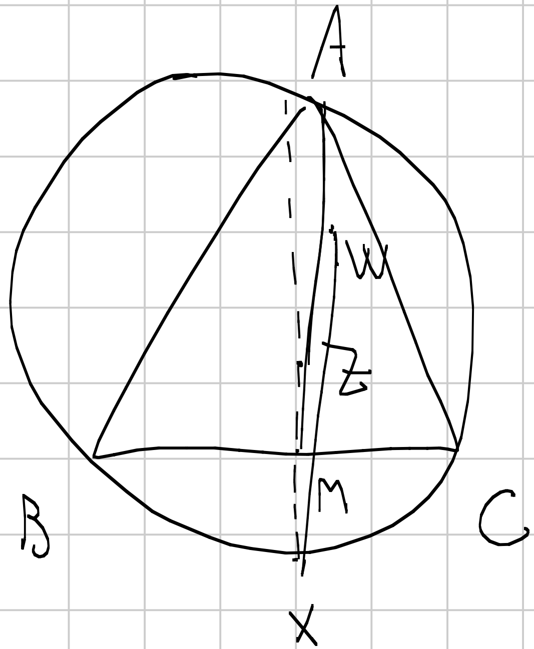
$$|\overrightarrow{WF}| = |\vec{F} - \vec{W}| = \left| \frac{\vec{A}+\vec{B}+\vec{C}}{2} - \frac{\vec{B}+\vec{C}}{2} - \frac{\vec{A}}{2} + \frac{\vec{X}}{2} \right| =$$

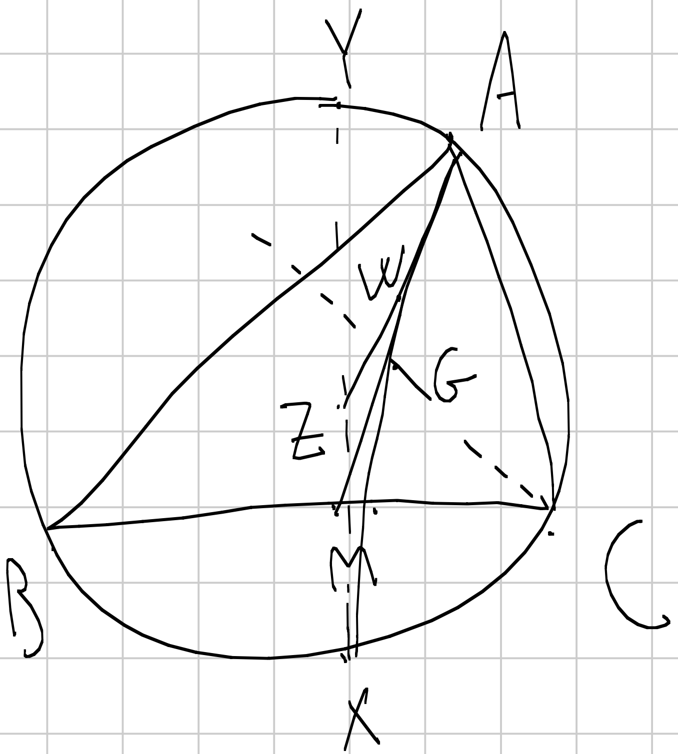
$$= \left| \frac{\vec{X}}{2} \right| = \frac{R}{2}$$

2) $\vec{Y} = -\vec{X} \implies \overrightarrow{AY} = -\vec{A} - \vec{X}$

$$\overrightarrow{WM} = \vec{M} - \vec{W} = \frac{\vec{X}}{2} - \frac{\vec{A}}{2}$$

$$\overrightarrow{AY} \cdot \overrightarrow{WM} = \frac{1}{2}\left(R^2 - R^2\right) = 0$$

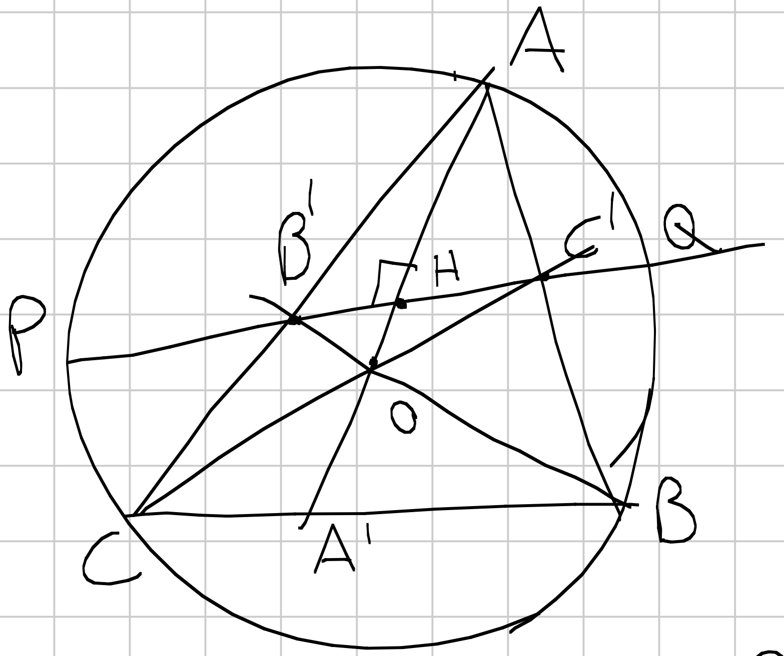




O_m di centro G e $K = -\frac{1}{2}$

$X \longrightarrow W$.

Geometria 3



Th $AB = AC \rightarrow AP = AQ$

1^a parte

Hp) $AB = AC$ Th) $AP = AQ$

Simmetria rispetto ad A_0

P é il simmetrico di $Q \rightarrow$

$AP = AQ$

2^a parte

Hp) $AP = AQ$ Th) $AB = AC$

Prendo $A\hat{B}C$ acutangolo

1^o modo : AH altezza da A a $PQ \rightarrow$ anche asse $\rightarrow$

$O \in AH$

$A\widehat{B'}H = 180^\circ - A\hat{H}B - B'\hat{A}H = 90^\circ - (90^\circ - \beta) = \beta \rightarrow C'\hat{B}C = 180^\circ$

$C'\hat{B}C = 180° - \beta = 180° - C'\hat{B'}C \longrightarrow B'C'BC$ ciclico $\rightarrow$

$B'\hat{B}C' = B'\hat{C}C'$

$\quad\;\; \shortparallel \qquad\qquad\quad \shortparallel$

$90° - \gamma \qquad 90° - \beta \longrightarrow \beta = \gamma$

Modo 2:

Sia f la simmetria rispetto ad AO.

$f(P) = Q$

Voglio dimostrare che $f(B') = C'$

Supp. x assurdo $HB' \neq HC'$ $(C'H > B'H)$

$\cancel{OHA_g}\, C'\hat{O}A > \cancel{OHA_g}\, B'\hat{O}A \longrightarrow C'\hat{O}A > B'\hat{O}A$ (1)

Analogamente $C'\hat{A}O > B'\hat{A}O$ (2)

$A\hat{O}B' = B\hat{O}A' = 2B\hat{A}A' \longrightarrow \cancel{2}B\hat{A}A' < \cancel{2}C\hat{A}A'$

$A\hat{O}C' = \ldots = 2C\hat{A}A'$

assurdo per la (2

$$f(B') = C' \longrightarrow \begin{matrix} f(AB') = AC' \\ f(\Gamma) = \Gamma \end{matrix} \longrightarrow \underset{\underset{\displaystyle f(C)}{\parallel}}{f(AB' \cap \Gamma)} = \underset{\underset{\displaystyle B}{\parallel}}{AC' \cap \Gamma}$$

caso $\underline{II}$: $\alpha = 90° \longrightarrow P$ e $Q \equiv B$ e C

caso $\boxed{III}$: $\alpha > 90°$

~~caso~~ caso $\underline{IV}$ $\beta \geq 90°$

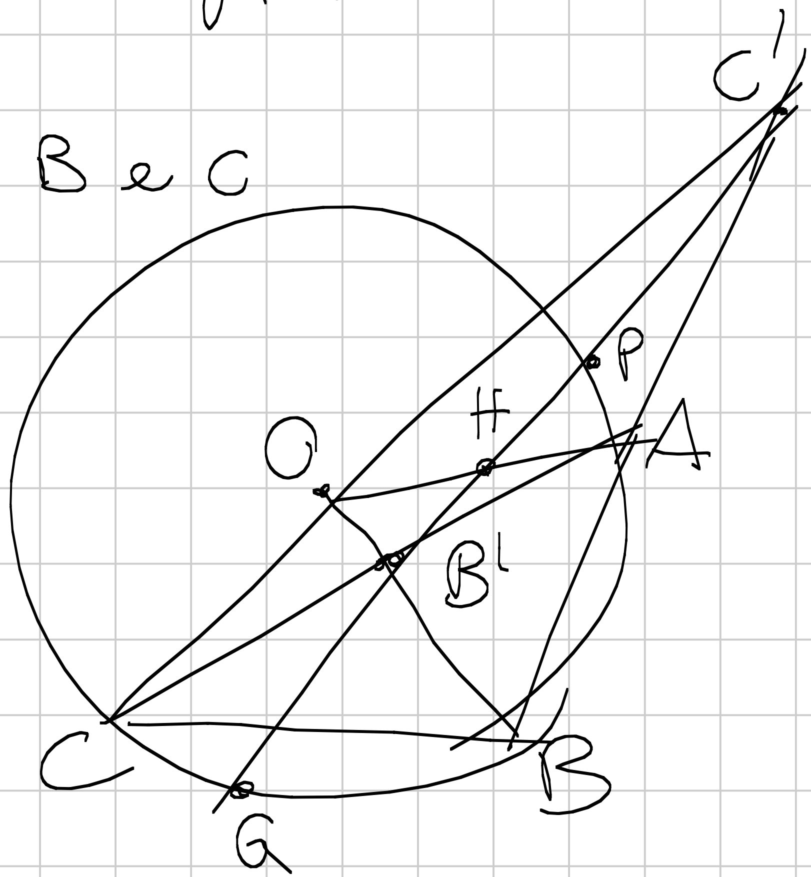
cerco un assurdo

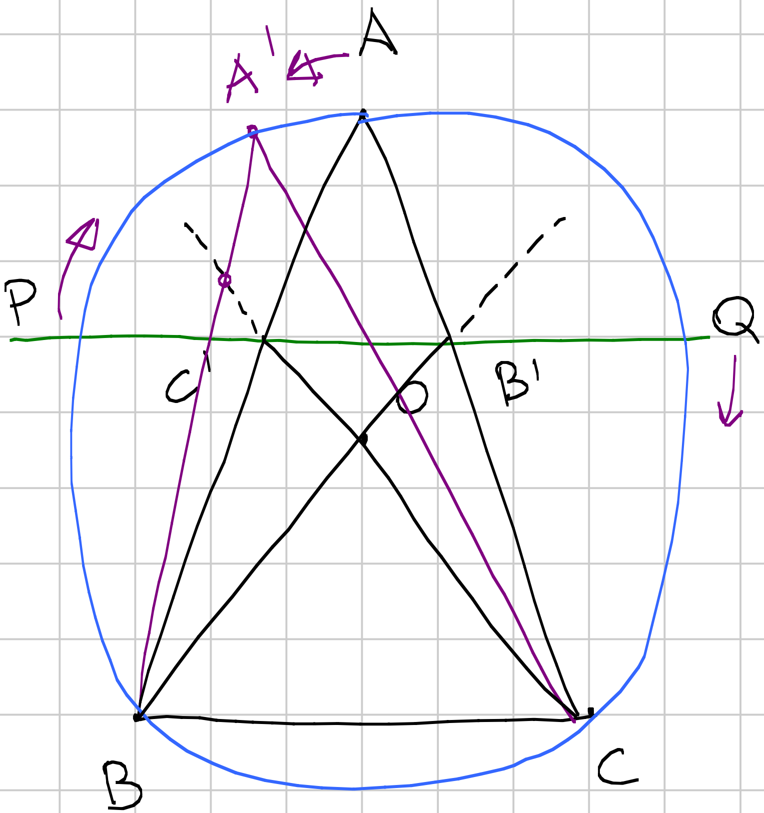
$C\widehat{H}A = 90°$

$\widehat{HAC} = 180° - O\widehat{AB} = 180° - (90° - \gamma) =$

$= 90° + \gamma > 90°$

assurdo.





C' sale
B' scende

la retta C'B' ruota

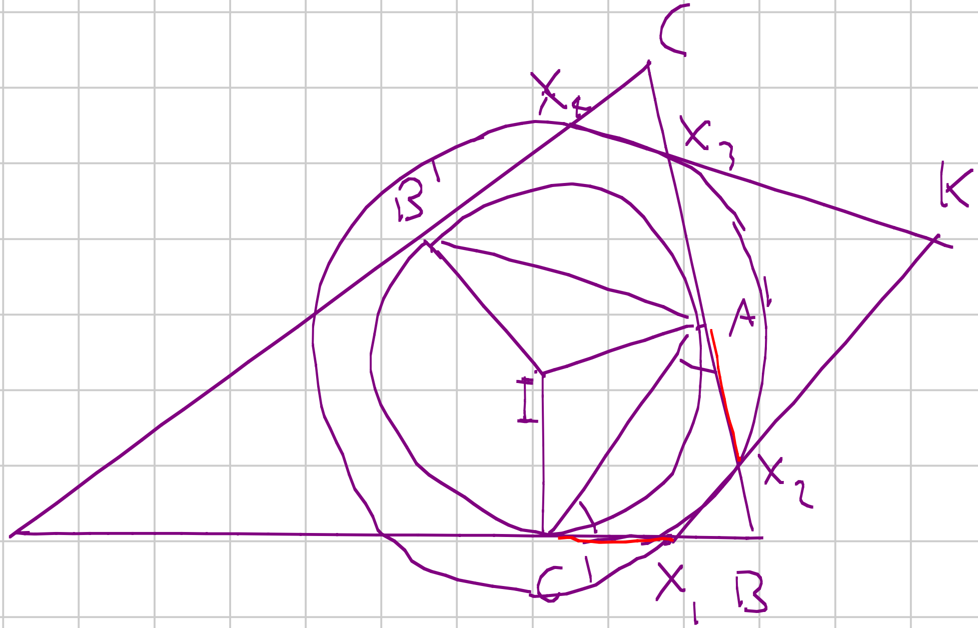
quindi P sale
Q scende

quindi AP diminuisce
" AQ aumenta

RELAZIONE G2

Titolo nota 25/01/2008

1^a SOLUZIONE



$$X_2A' = X_3A'$$

$$I\hat{A}'X_3 \cong I\hat{A}'X_2$$

$$A'X_3 = A'X_2 = C'X_1 = B'X_4$$

$$X_1X_2 \parallel C'A'$$

$$X_3X_4 \parallel B'A'$$

Ω_m centro A:

$B' \longrightarrow X_4$

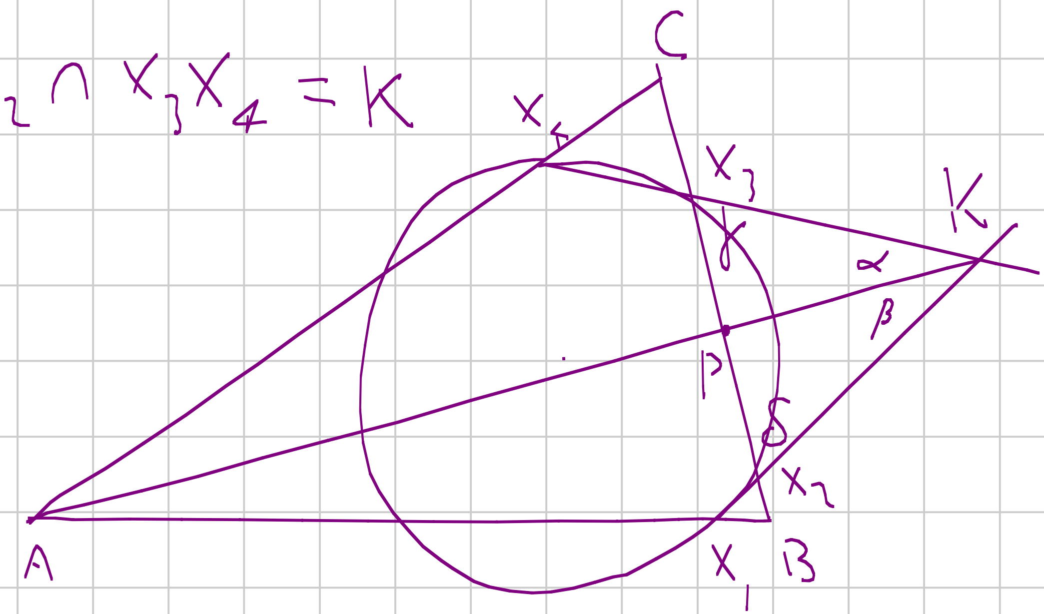
$C' \longrightarrow X_1$

$B'A' \longrightarrow X_3X_4$

$A'C' \longrightarrow X_1X_2$

$A'C' \cap A'B' \longrightarrow X_1X_2 \cap X_3X_4 = K$

A, A', K allineati



2^A SOLUZIONE

USO MENELAO SU $A\hat{B}P$ E $X_1 X_2$:

$$\frac{AX_1}{X_1B} \cdot \frac{BX_2}{X_2P} \cdot \frac{PK}{KA} = 1$$

MENELAO SU $A\hat{C}P$ E $X_3 X_4$:

$$\frac{AX_4}{X_4C} \cdot \frac{CX_3}{X_3P} \cdot \frac{PK}{KA} = 1$$

$$\frac{X_3P}{X_2P} = 1$$

X_2

A X_1 B

TERZA SOLUZIONE

TEOREMA DEI SENI SU $\overset{\triangle}{PKX_3}$:

$$\frac{PX_3}{\operatorname{sen}\alpha} = \frac{PK}{\operatorname{sen}\gamma}$$

T. DEI SENI SU $\overset{\triangle}{PKX_2}$:

$$\frac{PX_2}{\operatorname{sen}\beta} = \frac{PK}{\operatorname{sen}\delta}$$

$$\frac{PX_3}{PX_2} \cdot \frac{\operatorname{sen}\beta}{\operatorname{sen}\alpha} = \frac{\operatorname{sen}\delta}{\operatorname{sen}\gamma} \Longrightarrow \frac{\operatorname{sen}\delta \cdot \operatorname{sen}\alpha}{\operatorname{sen}\gamma \operatorname{sen}\beta} = 1$$

T. DEI SENI SU $K\hat{X}_4A$:

$$\frac{AX_1}{\operatorname{sen}\beta} = \frac{AK}{\operatorname{sen}\delta}$$

T. SENI SU $K\hat{X}_1A$:

$$\frac{AX_4}{\operatorname{sen}\alpha} = \frac{AK}{\operatorname{sen}\gamma}$$

$$\frac{\operatorname{sen}\alpha}{\operatorname{sen}\beta} = \frac{\operatorname{sen}\gamma}{\operatorname{sen}\delta}$$ CHE È LA TESI