Titolo nota 19/10/2010

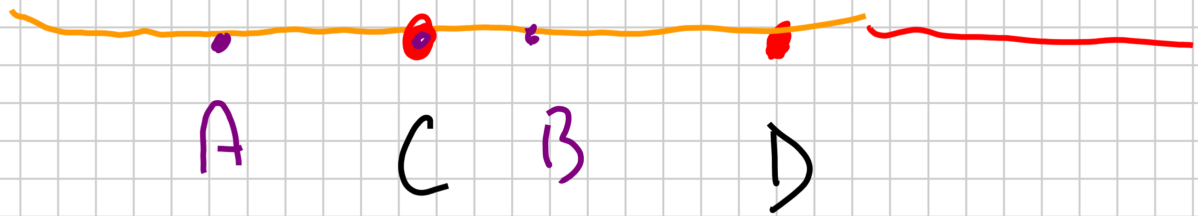
$$\frac{2}{AB} = \frac{1}{AC} + \frac{1}{AD}$$

$$AB = \frac{2}{\frac{1}{AC} + \frac{1}{AD}}$$

AC, AB, AD

prop. armonica

$$\frac{1}{AC}, \frac{1}{AB}, \frac{1}{AD}$$



$$(A,B,C,D) = -1 \qquad \frac{AC}{CB} = -\frac{AD}{DB} \iff$$

$$AC \cdot DB + AD \cdot CB = 0$$

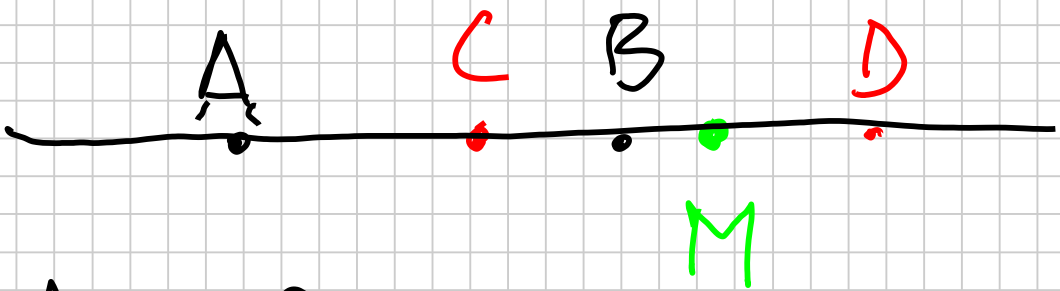
$$(c-a)(b-d) + (d-a)(b-c) = 0 \iff$$

$$c(b-d) + d(b-c) = 0 \iff$$

$$cb - cd + bd - cd = 0 \iff$$

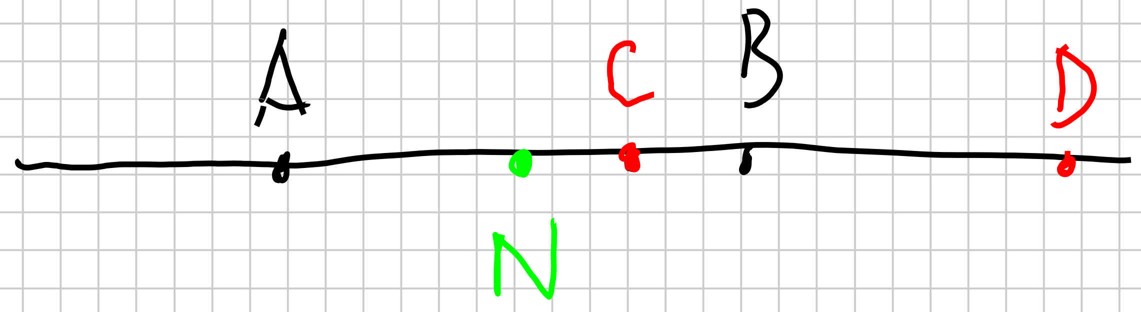
$$2cd = bc + bd \iff$$

$$\frac{2}{b-a} = \frac{1}{d-a} + \frac{1}{c-a} \iff \frac{2}{AB} = \frac{1}{AC} + \frac{1}{AD}$$



M p. medio di CD

$$MA \cdot MB = MC^2 \iff MC = \sqrt{MA \cdot MB}$$



N pt. medio di AB

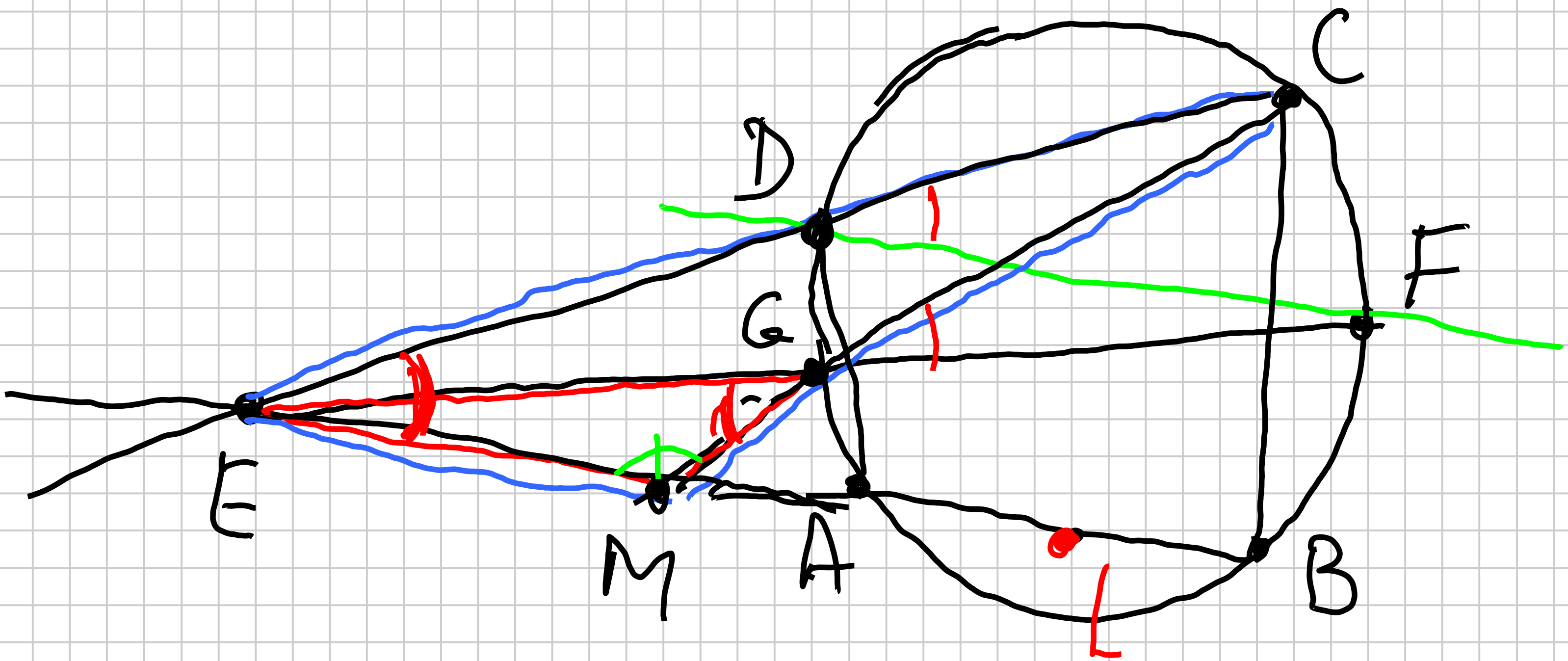
Relazione di Mac Laurin

$$(A, B, C, D) = -1 \iff$$

$$CA \cdot CB \doteq CD \cdot CN$$

Sia $ABCD$ un quadrilatero convesso inscritto in un cerchio γ, sia $E = AB \cap CD$, sia $F \in \gamma$ con $DF \| AB$, sia $G = \gamma \cap EF$, siam $M = AB \cap CG$. Dimostrare che

$$\frac{1}{EM} = \frac{1}{EA} + \frac{1}{EB}$$



$$\frac{EM}{MG} = \frac{MC}{EM} \iff EM^2 = MC \cdot MG$$

rel.

$$ME^2 = MA \cdot MB \implies \text{Newton}$$

$$(EL, AB) = -1$$

Per la relaz. di Cartesio

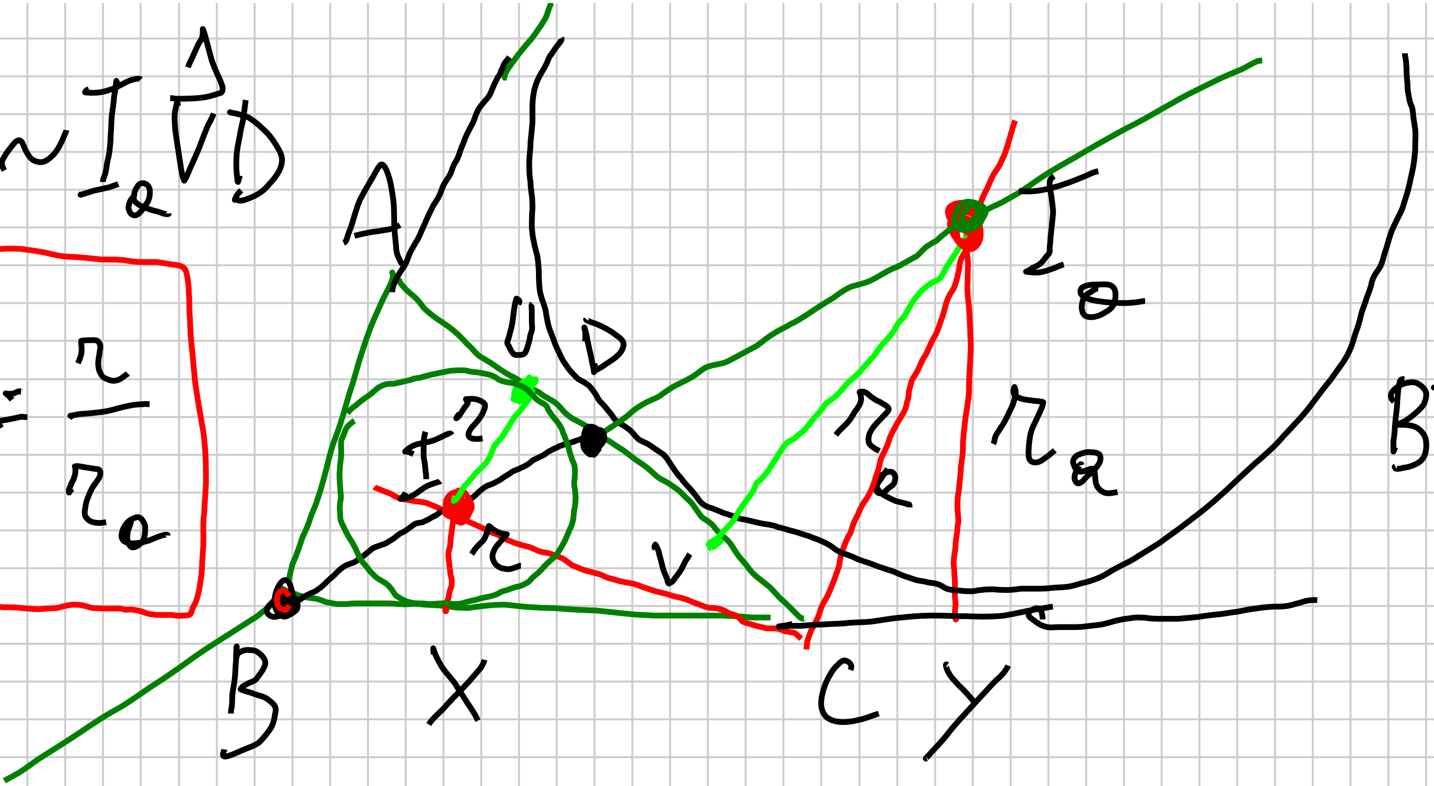
$$\frac{2}{EL} = \frac{1}{EA} + \frac{1}{EB}$$

$2 \cdot EM$

$\boxtimes$

$\triangle IUD \sim \triangle I_aVD$

$$\boxed{\frac{ID}{DI_a} = \frac{r}{r_a}}$$

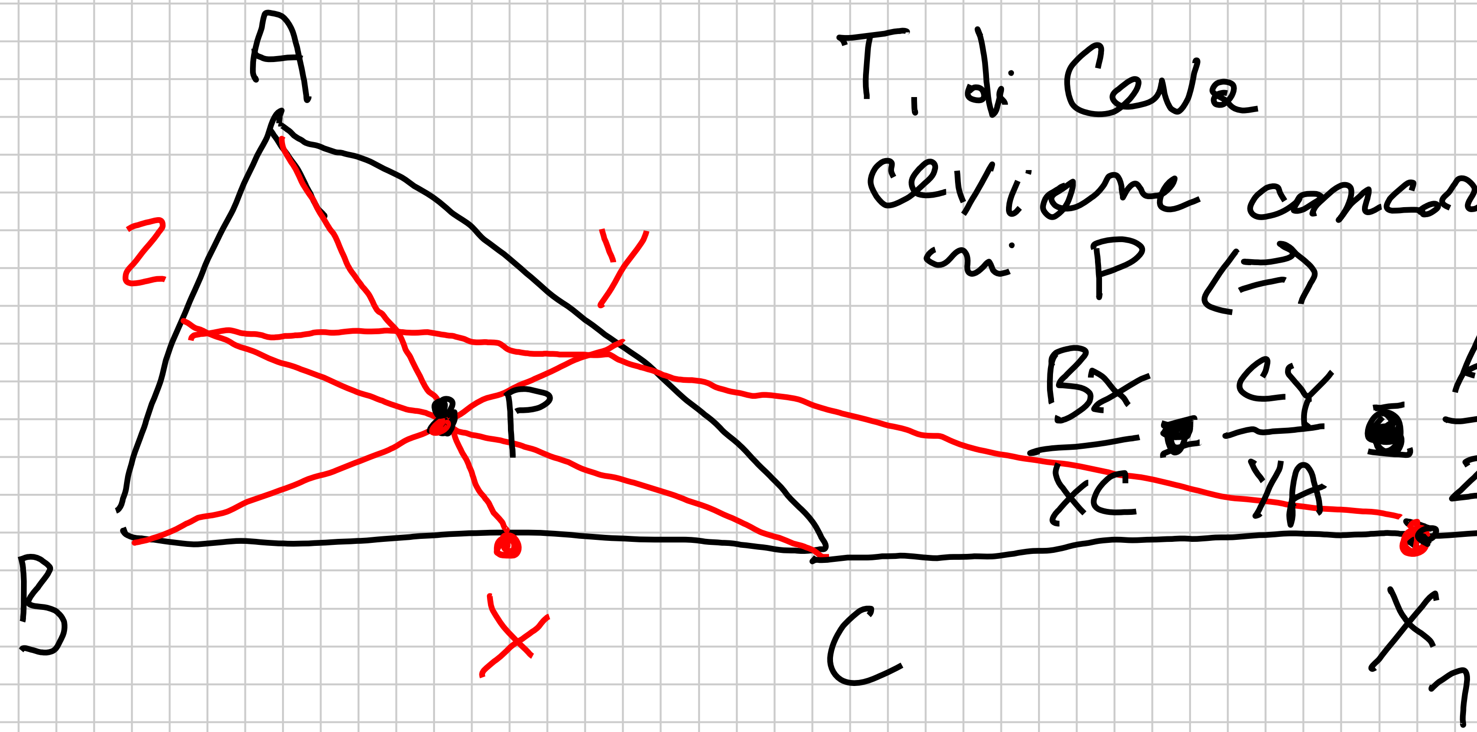


$\triangle BIX \sim \triangle BI_aY$

$$(BD, II_a) = -1 \iff \frac{BI}{ID} = -\frac{BI_a}{I_aD}$$

$$\boxed{\frac{BI}{BI_a} = \frac{r}{r_a}}$$

$$\frac{ID}{DI_a} = \frac{BI}{BI_a} \iff \frac{BI}{ID} = \frac{BI_a}{DI_a} = -\frac{BI_a}{I_aD}$$

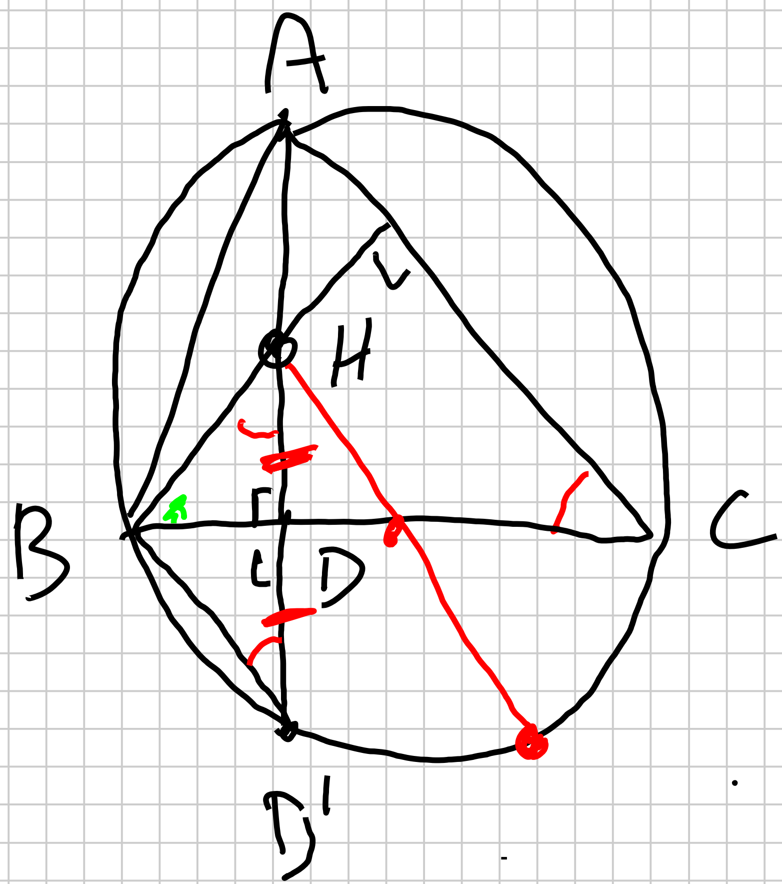


T. di Ceva

ceviane concorrono in P $\iff$

$$\frac{BX}{XC} \cdot \frac{CY}{YA} \cdot \frac{AZ}{ZB} = 1$$

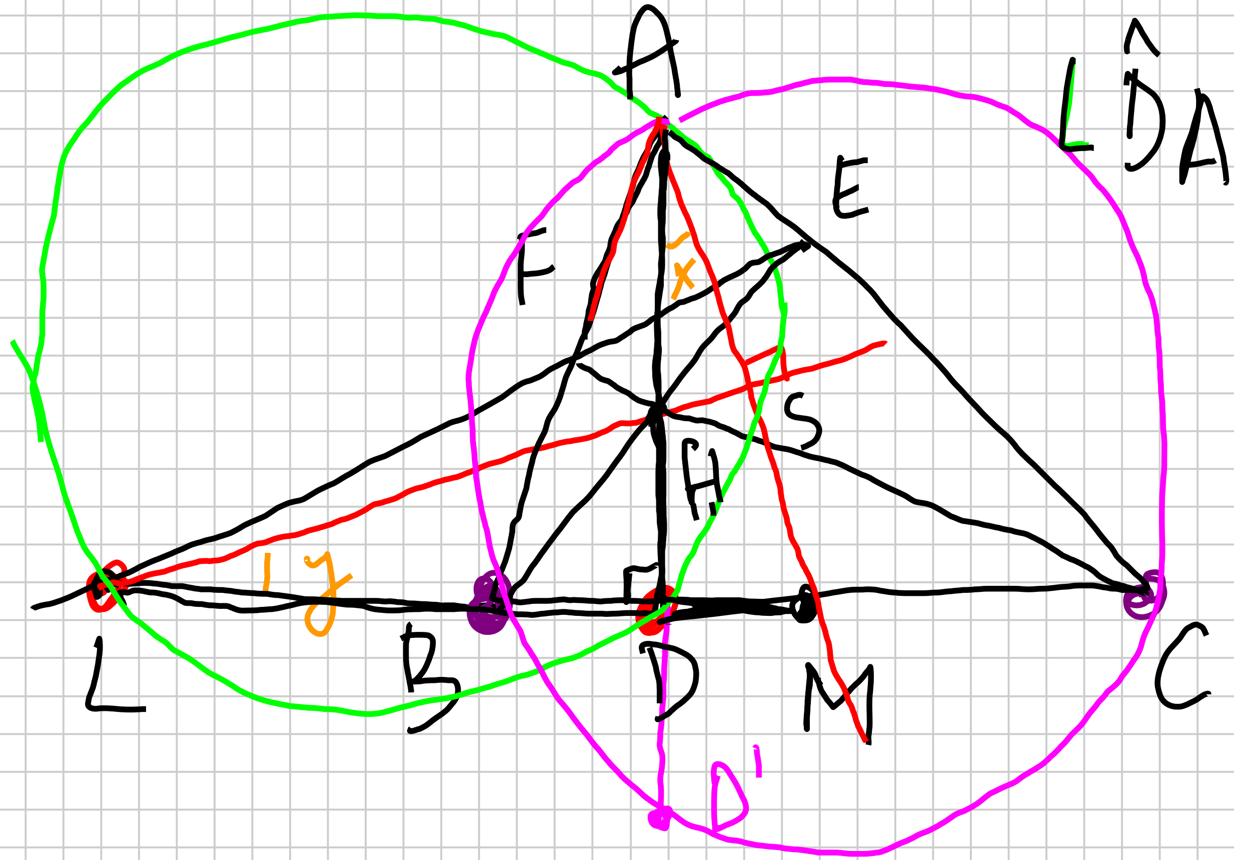
Lemma dell'ortocentro



Tesi $HD = DD'$

$$\boxed{B\hat{H}D \cong B\hat{D}D'}$$

Sia ABC un triangolo, sia M il punto medio di BC e siano D, E, F i piedi delle altezze relative ai lati BC, CA, AB. Se H è l'ortocentro di ABC ed $L = EF \cap BC$ dimostrare che $AM \perp LH$.



$L\hat{D}A = L\hat{S}A$

$(LD, BC) = -1$

Relazione di Mac Laurin

$$DB \cdot DC = DL \cdot DM \qquad (1)$$

Teorema delle corde.

$$BD \cdot DC = AD \cdot DD'$$

$$BD \cdot DC = AD \cdot HD \qquad (2)$$

$$DB \cdot DC = AD \cdot DH$$

$$DL \cdot DM = AD \cdot DH \implies$$

$$\frac{AD}{DM} = \frac{DL}{DH} \implies \cot x = \cot y$$

$$\Downarrow$$

$$x = y$$