

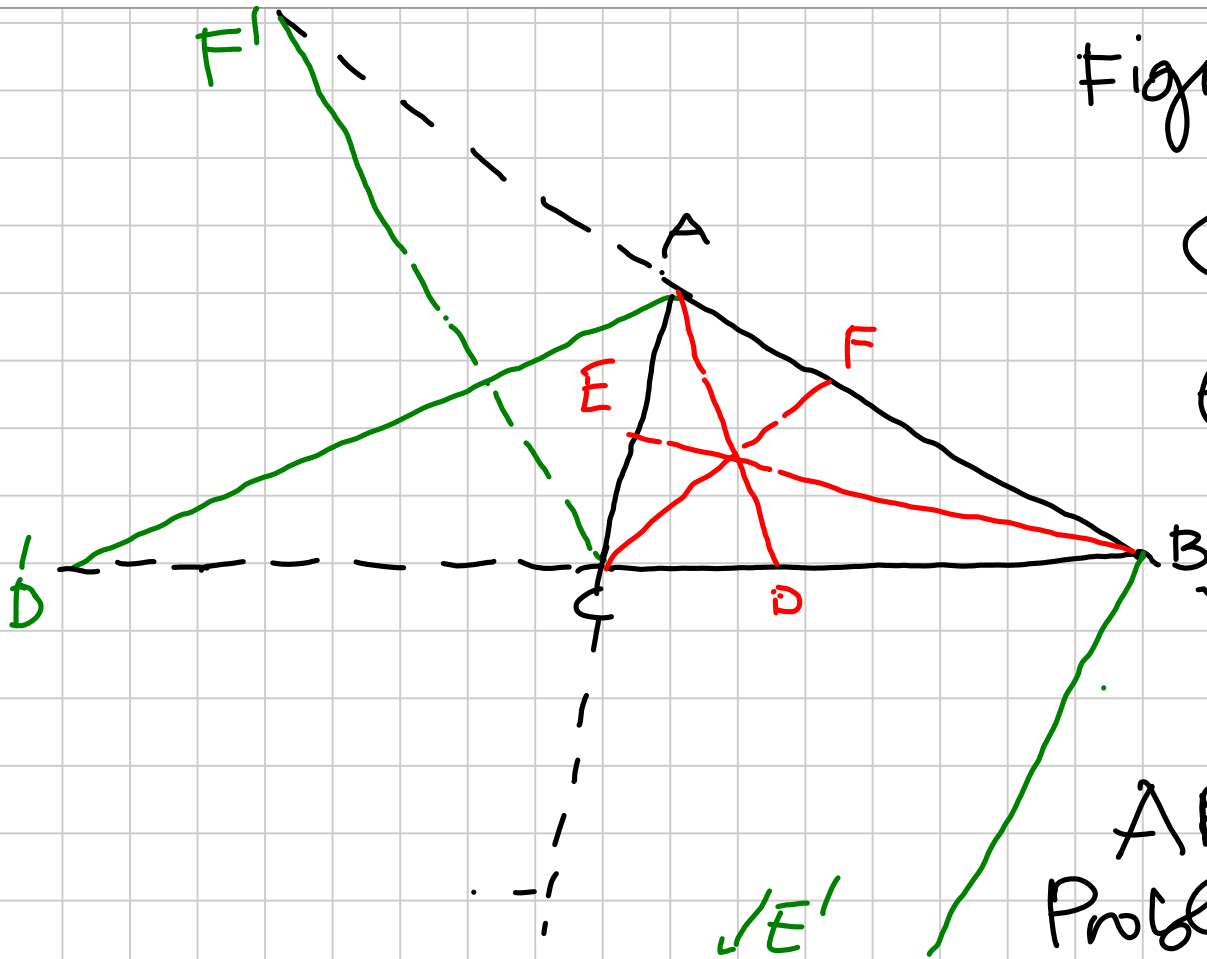
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APR - WERNICK

Problems & solutions in E. G



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introduction to geometry
geometry revisited

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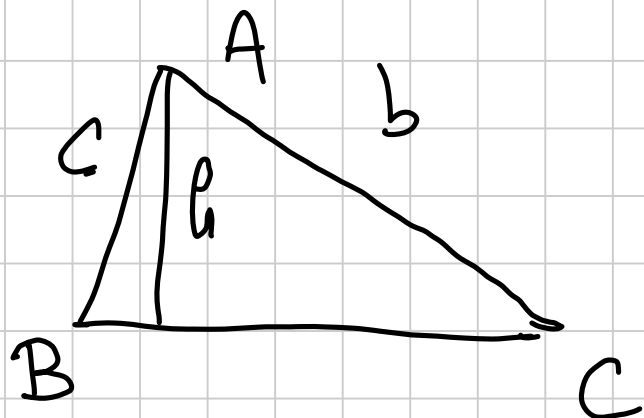
Johnson Advanced Euclidean G.

Aref-Wernick Problems & solutions
in euclidean G.

YAGLOM Geometric Transformations
I II III

HONSBERGER Episodes in 19th and 20th
century euclidean G. (MAA)

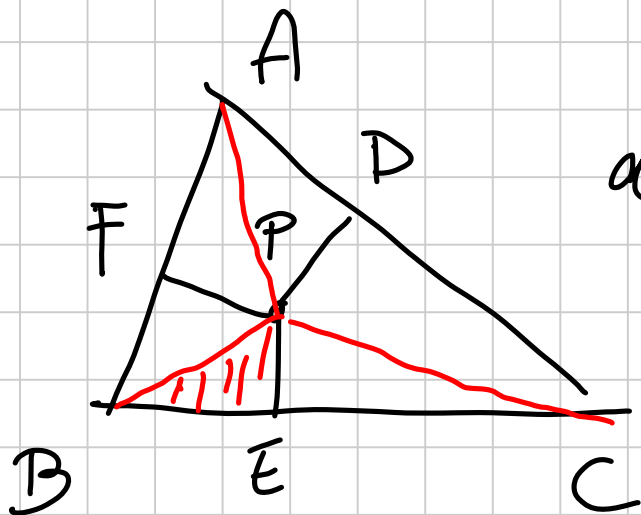
1)



$$\frac{1}{h^2} = \frac{1}{b^2} + \frac{1}{c^2}$$

Pitagora

2)



$$a) AF^2 + BE^2 + CD^2 = BF^2 + CE^2 + AD^2$$

$$AP^2 = FP^2 \dots$$

b) ABC é equil. e P é interno

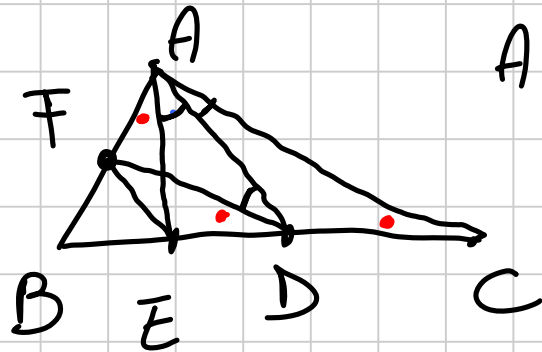
$$AF^2 - BF^2 + \dots = 0$$

$$AF^2 - BF^2 + BE^2 - CE^2 + CD^2 - AD^2 = 0$$

$$\cancel{AF^2 - BF^2} + \cancel{BE^2 - CE^2} + \cancel{CD^2 - AD^2} = 0$$

$$AF + BE + CD = BF + CE + AD$$

3)



AD biseacă $\widehat{CAE}$

$EF \parallel AD$

F p.m. med $\perp AB$

$AB = BD$

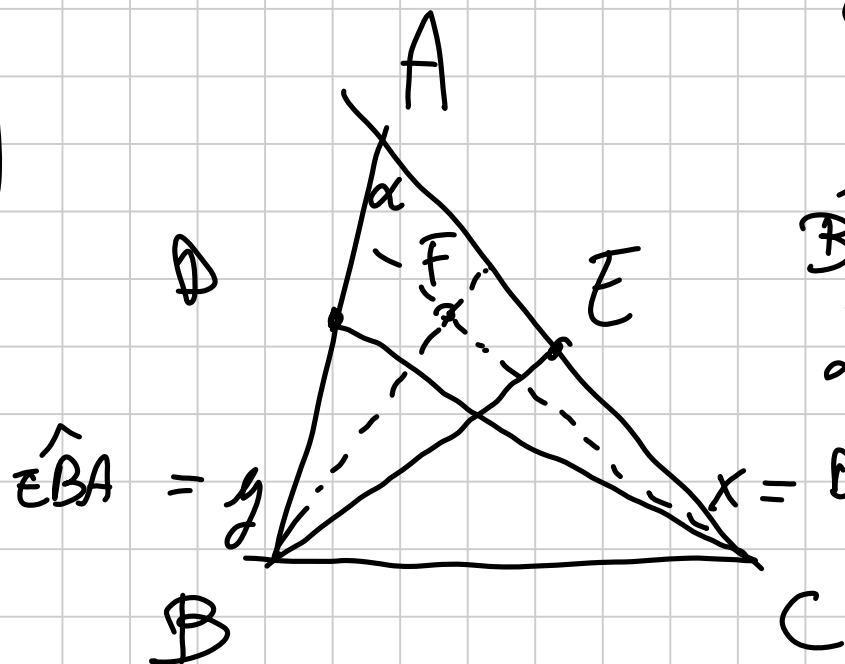
$\Rightarrow \triangle ABD$ isoscele

$FD \parallel AC$

$$\widehat{ADE} = \widehat{DAC} + \widehat{ACD} \Rightarrow \text{pichie } \widehat{FDE} = \widehat{ACD} \text{ la } \widehat{ADF} = \widehat{DAC}$$

$$\text{ma } \hat{ADF} = \hat{DAE}.$$

4)

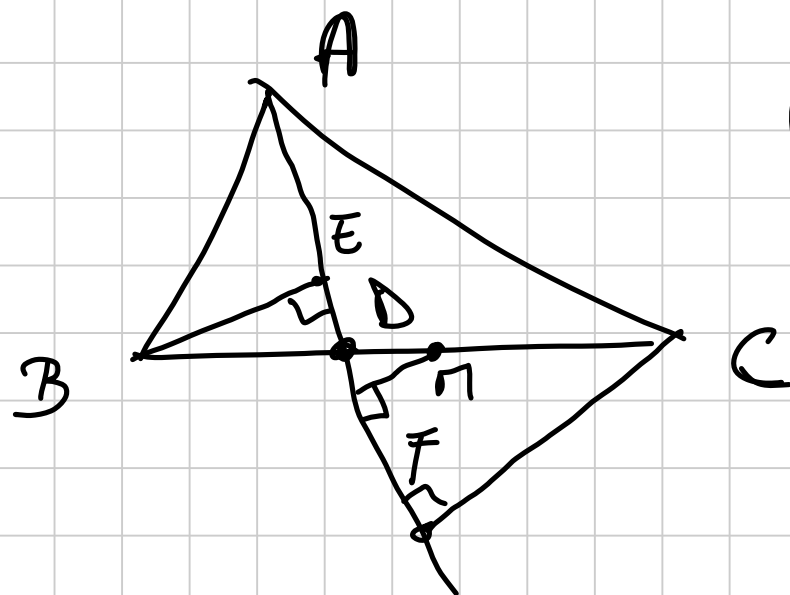


$$\hat{BDC} + \hat{BEC} = 2\hat{BFC}$$

$$\parallel \alpha + x \quad \parallel \alpha + y \quad \parallel \alpha + \frac{x}{2} + \frac{y}{2}$$

nel quad $ABFC$

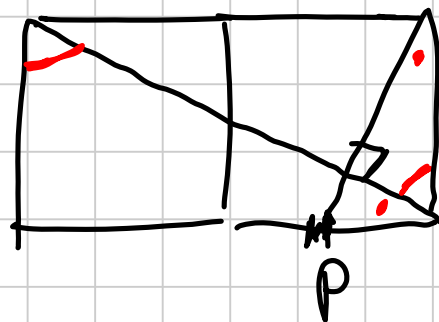
5)



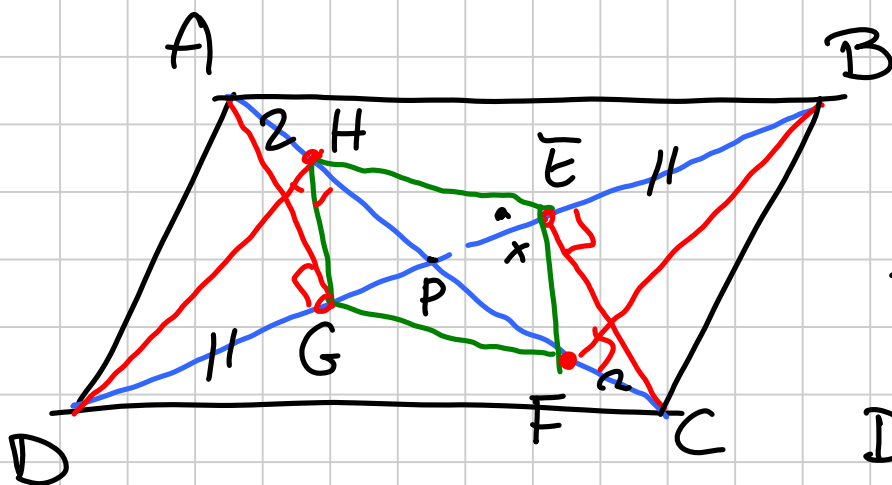
$$PE = PF$$

proiettato su AD e finito.
per Talete

6)



7)



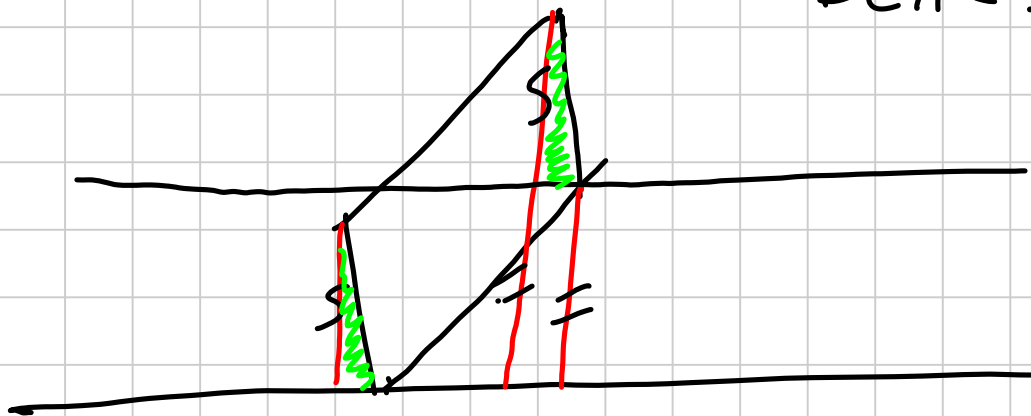
$EFCB$ cíclico

$$\hat{PEF} = \pi - \hat{FEB} = \hat{FCB}$$

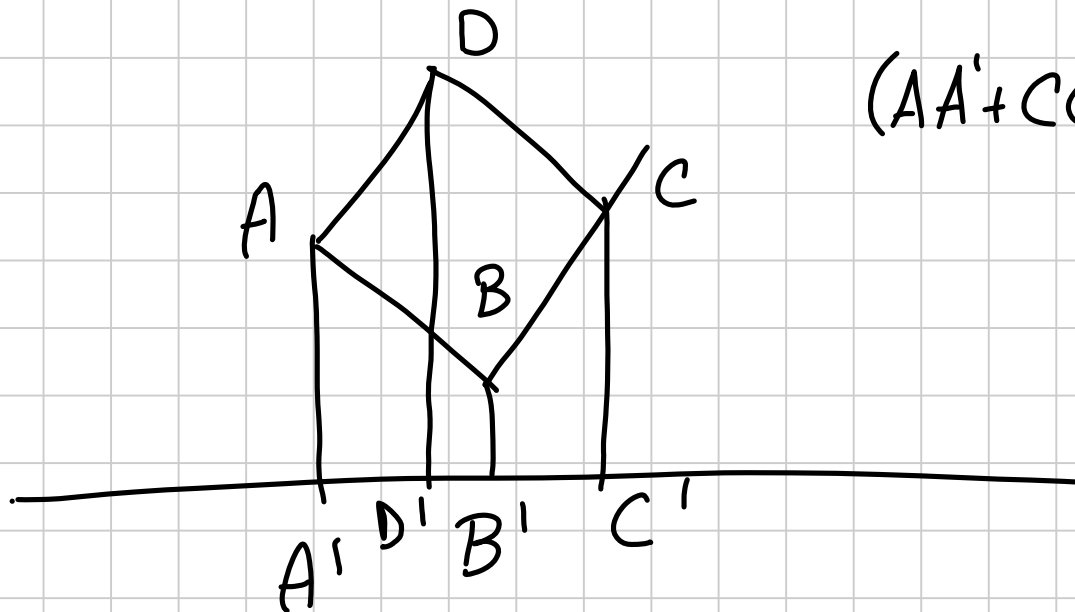
$DHCE$ cíclico

$$\hat{DEH} = \hat{DCH}$$

8)

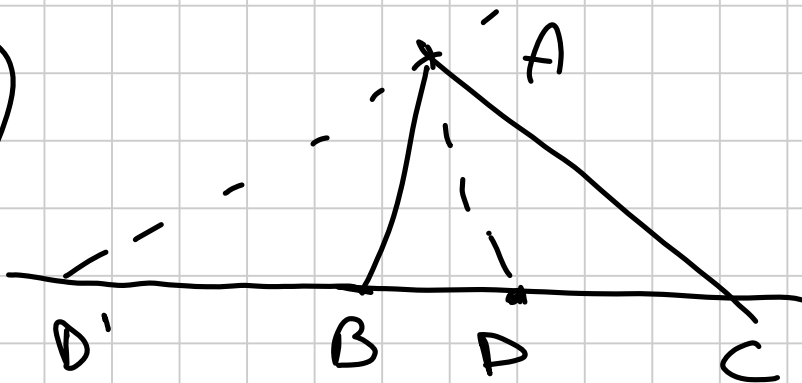


9)



$$(AA' + CC')^2 = (BB' + DD')^2$$

13)



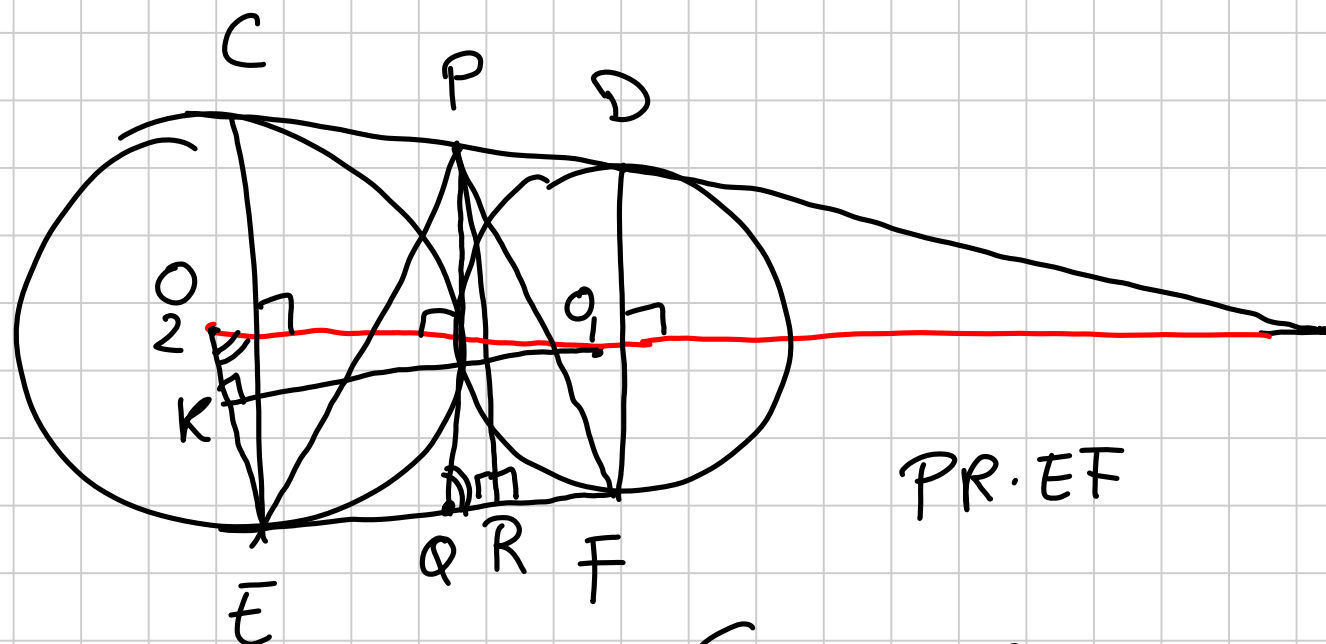
$$\frac{BD}{DC} = \frac{AB}{AC}$$

$$BD + DC = BC$$

$$BD = \frac{AB}{AB + AC} \cdot BC$$

$$DC = \frac{AC}{AB + AC} \cdot BC$$

12)



PR. EF

$$S_{E \neq P} = \frac{PR \cdot EF}{2}$$

$$S_{\text{CEP}} + S_{\text{POF}} = \frac{\text{PR. EF}}{2}$$

Δ PAR Δ O₁ O₂ k 2000
2000

$$\frac{PR}{PQ} = \frac{O_1 k}{O_1 O_2}$$

$$EF = O_1 k = PQ$$

$$\frac{PR}{EF} = \frac{EF}{O_1 O_2}$$