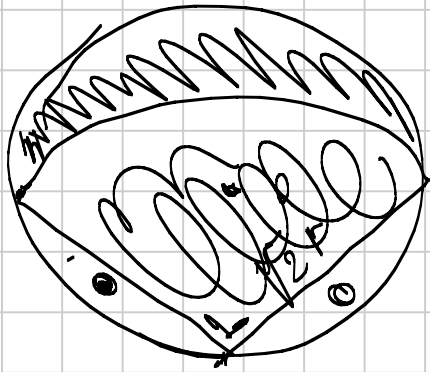


GEOMETRIA

Titolo nota

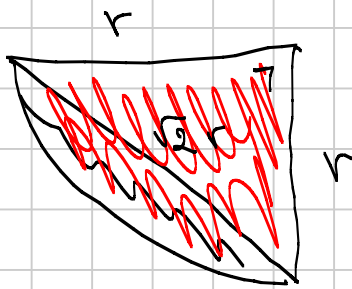
26/01/2015



$$\begin{array}{l} 1 \quad r \\ 2 \quad \sqrt{2} r \end{array}$$

$$\sqrt{r^2 + r^2} = \sqrt{2} r$$

$$\pi r^2 - \frac{1}{4} \pi (\sqrt{2} r)^2 = \frac{\pi}{2} r^2$$

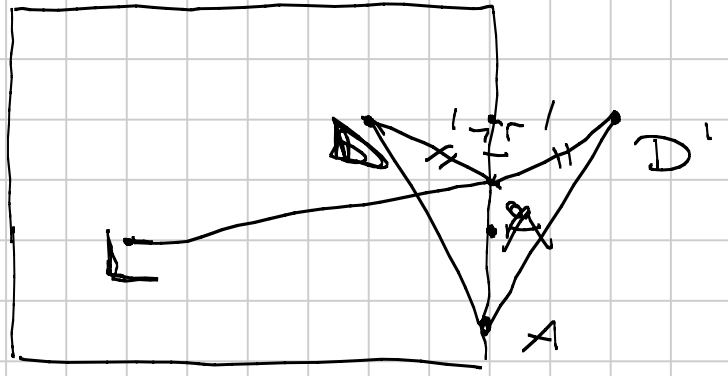


$$\frac{1}{4} \pi r^2 - \frac{1}{2} r^2 = \frac{\pi - 2}{4} r^2$$

$$\frac{\pi - 2}{4} r^2 = \left(\frac{\pi}{2} - 1 \right) r^2$$

$$\frac{\pi}{2} r^2 - \left(\frac{\pi}{2} - 1 \right) r^2 = r^2$$

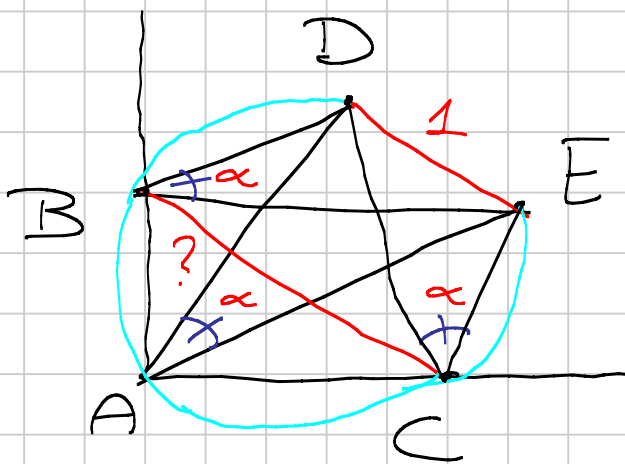
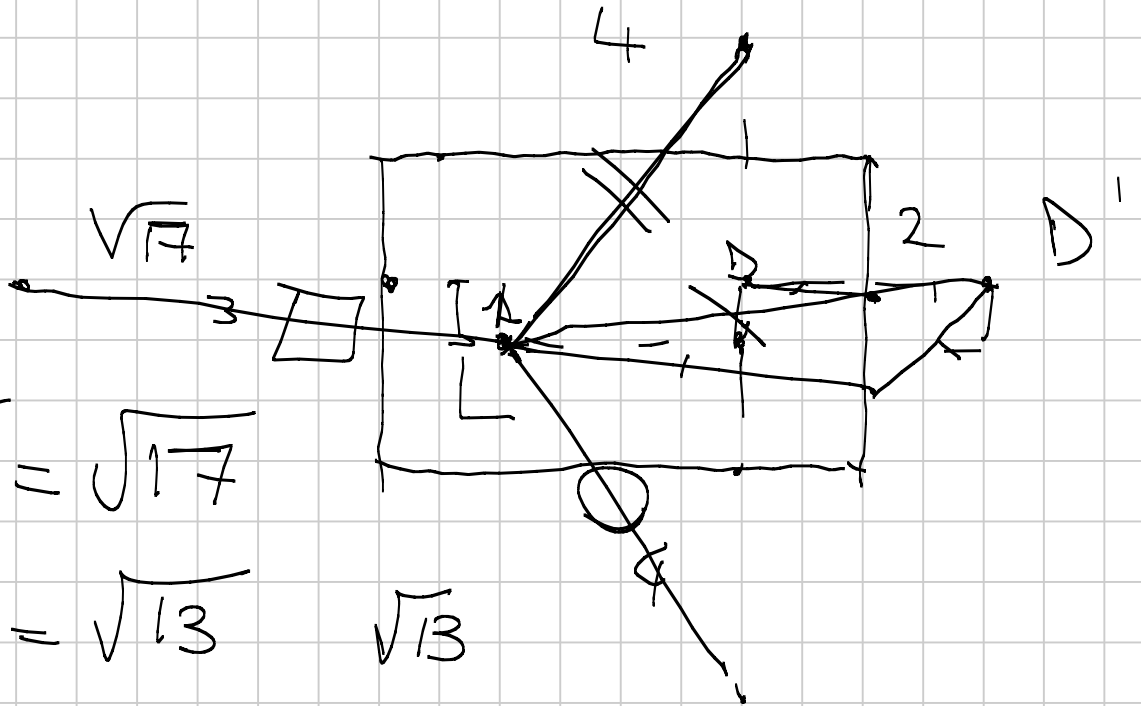
3



$\sqrt{13}$

$\sqrt{3^2 + 4^2} = \sqrt{17}$

$3^2 + 2^2 = \sqrt{13}$

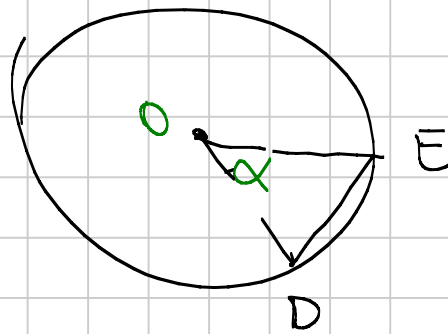
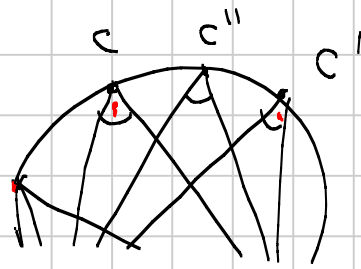


$|DE| = 1$

$|BC| = ?$

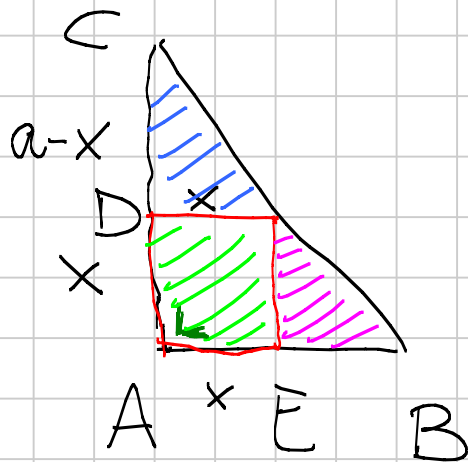
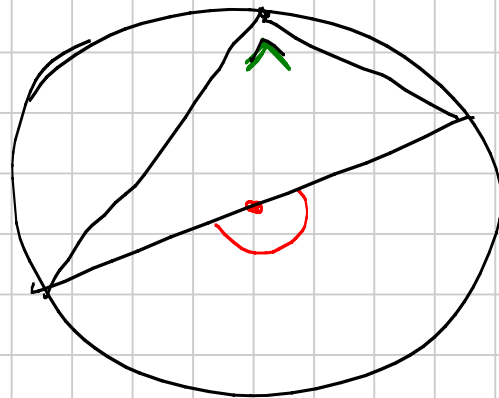
$\alpha = 30^\circ$

$\hat{BAC} = 90^\circ \Rightarrow BC \text{ \u00e9 diameter}$



$$\alpha = 60^\circ$$

$$OE = OD$$



α lato quadrato

$$AC = a$$

$$AB = b$$

$$DC = a - x$$

$$EB = b - x$$

$$\frac{1}{x} = \frac{1}{a} + \frac{1}{b}$$

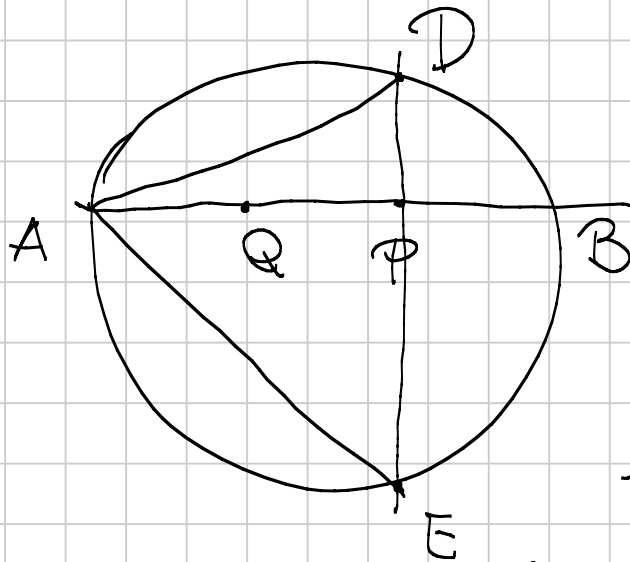
$$\frac{(a-x)x}{2} + x^2 + \frac{(b-x)x}{2} = \frac{ab}{2}$$

$$ax - \cancel{x^2} + 2\cancel{x^2} + bx - \cancel{x^2} = ab$$

$$x(a+b) = ab$$

$$x = \frac{ab}{a+b}$$

$$\frac{1}{x} = \frac{a+b}{ab} = \frac{a}{ab} + \frac{b}{ab} = \frac{1}{b} + \frac{1}{a}$$



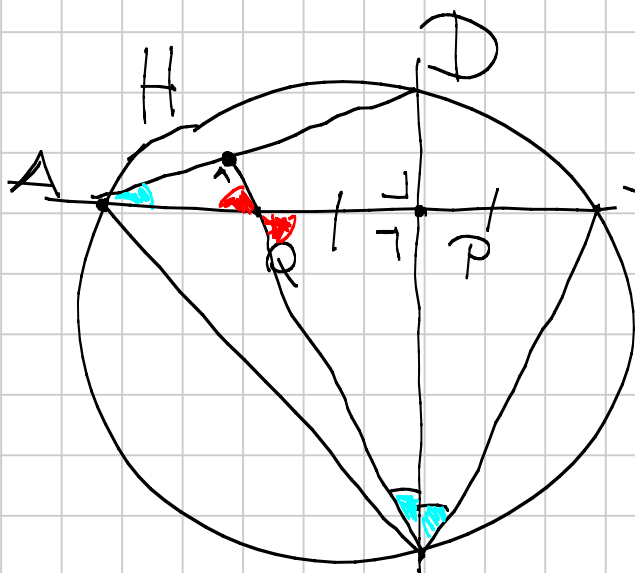
$$AP = 2PB$$

$$\hat{D}PB = 90^\circ$$

Q punto
medio de
AP

TESI

Q ortocentro di $\triangle ADE$



$$2\overline{PB} = \overline{AD}$$

$$\overline{QP} = \overline{PB}$$

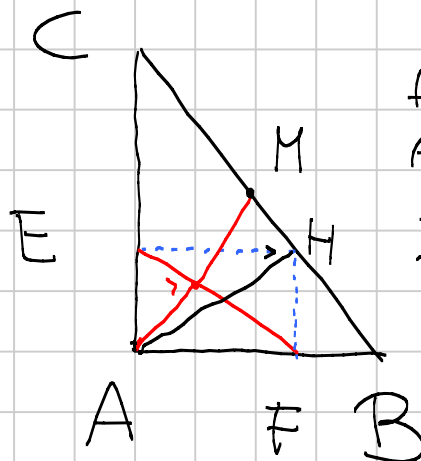
$$\angle EHA = 90^\circ$$

$$\hat{D}EB \cong \hat{D}AB \cong \hat{Q}EP$$

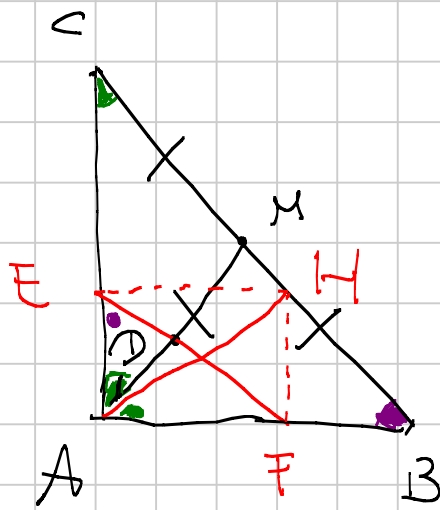
QBE isoscele

$$\hat{Q}EP + \hat{EQP} = 90^\circ$$

$$AM \perp EF$$



AH altezza
 AM mediana
 $HE \perp CA$
 $HF \perp AB$



$$\hat{BAC} = 90^\circ$$

$$\hat{BMC} = 180^\circ$$

$$MA = MB = MC$$

$$\hat{ACB} \cong \hat{CAM}$$

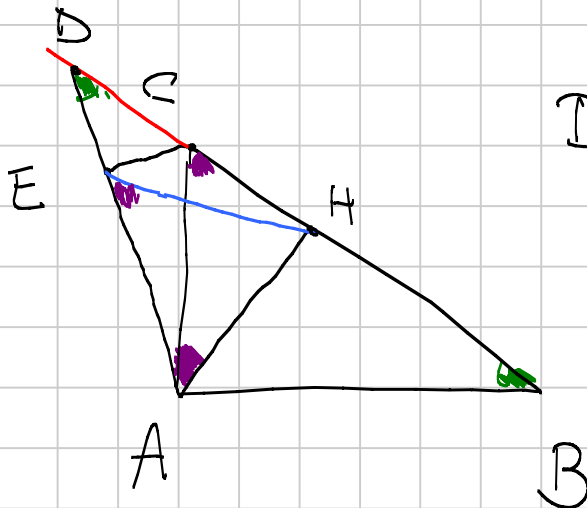
$$\hat{EDA} = 90^\circ ?$$

$$\hat{AEF} + \hat{EAM} = 90^\circ$$

$$\hat{ABC} = 90^\circ - \text{green}$$

$$\hat{EDA} = 180^\circ - \text{green} - \text{purple} = 90^\circ$$

$$\hat{HAF} = \text{green}$$



AH altura

$$DH = HB$$

$$CE \perp AD$$

TESI: $\overline{EH} = \overline{AH}$

$$\text{purple} + \text{green} = 90^\circ$$

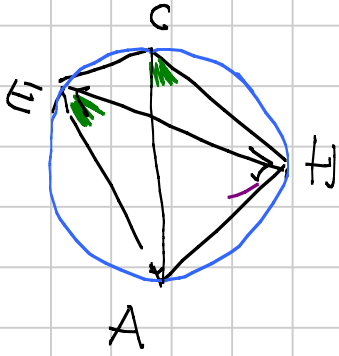
$$HB = HD$$

\Rightarrow

ABD e isoscele

$$AH \perp BD$$

$$\hat{ABD} \cong \hat{ADB}$$



$$\hat{C}EA = 90^\circ$$

$$\hat{A}HC = 90^\circ$$

$$\hat{A}CH \cong \hat{A}EH$$

5. Dato un triangolo isoscele ABC con $AB = AC$ e $\widehat{BAC} < 60^\circ$, sia D il punto su AC tale che $\widehat{DBC} = \widehat{BAC}$, sia E l'intersezione dell'asse di BD con la retta parallela a BC passante per A , e sia F il punto sulla retta AC , dalla parte di A rispetto a C , tale che la lunghezza di FA sia il doppio della lunghezza di AC .

Infine, siano r la perpendicolare ad AB condotta da F , s la perpendicolare ad AC condotta da E , e t la retta BD . Dimostrare che:

- (a) le rette EB e AC sono parallele;
 (b) le rette r , s e t concorrono.



16. **ESERCIZIO DIMOSTRATIVO**

Sia dato un triangolo ABC . Si indichino con M ed N i punti medi rispettivamente dei lati AC e BC . Siano inoltre S e T rispettivamente punti sui lati AC e BC tali che:

$$AS = \frac{1}{3}AC \quad BT = \frac{1}{3}BC.$$

Dimostrare che le bisettrici degli angoli \widehat{AST} e \widehat{BTS} si incontrano su un punto P del lato AB se e solo se il quadrilatero $AMNB$ è circoscrittibile ad una circonferenza.