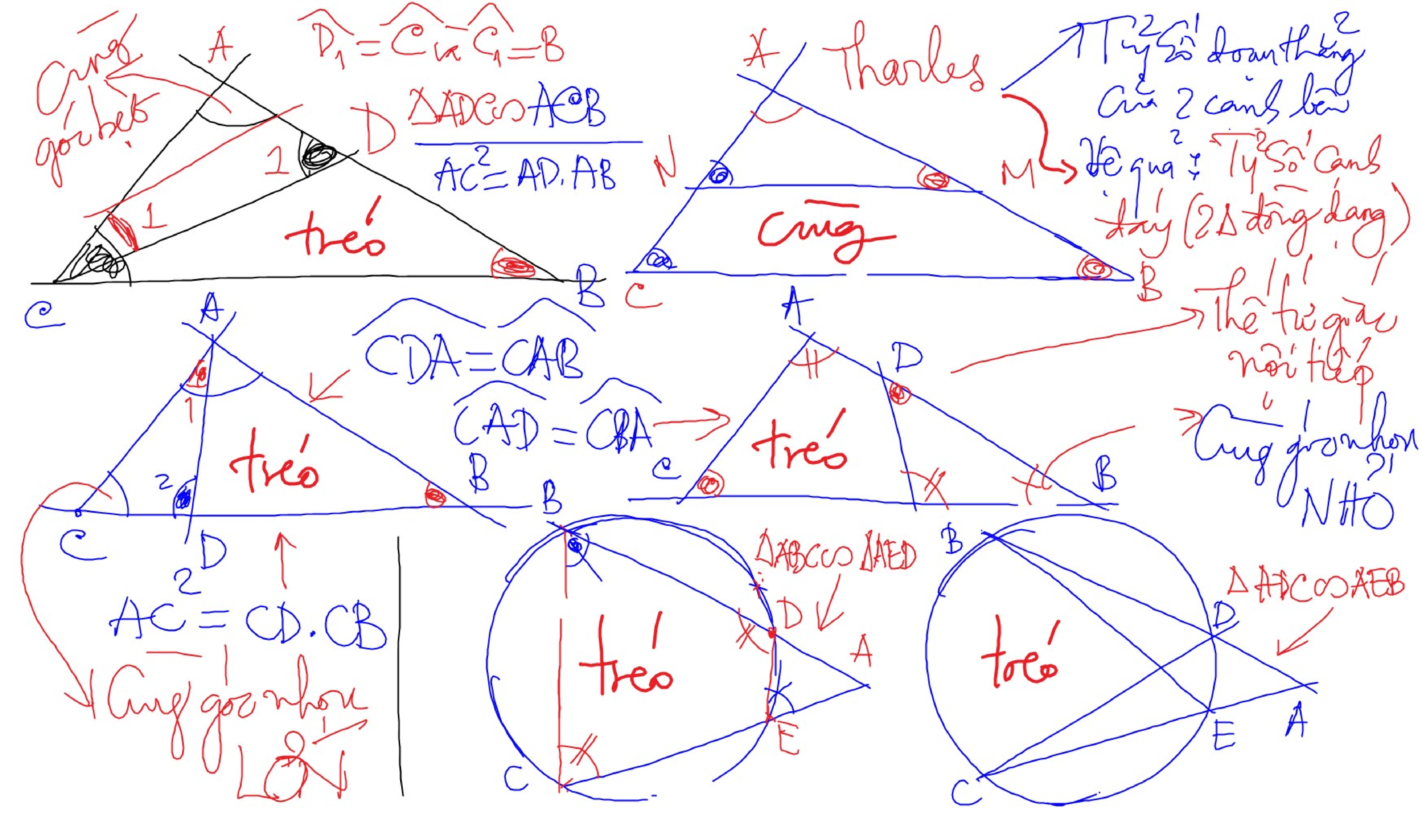
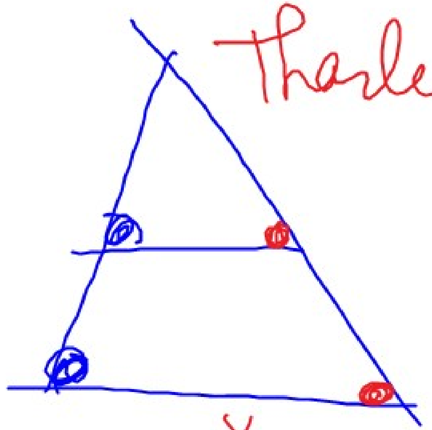
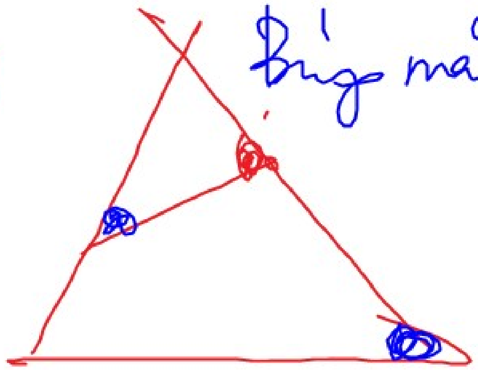


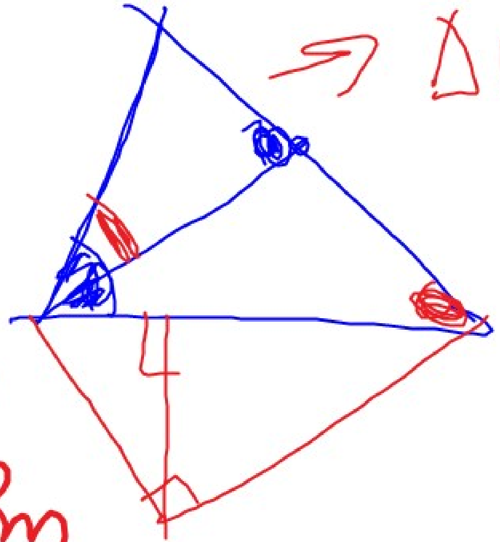
$\widehat{D_1} = \widehat{C}$ và $\widehat{C_1} = \widehat{B}$
$\Delta ADC \sim \Delta ACB$
$AC^2 = AD.AB$
Thales
Tỷ số đoạn thẳng của 2 cạnh bên
Hệ quả: Tỷ số cạnh đáy (2 Δ đồng dạng)
cùng
chéo
$\widehat{CDA} = \widehat{CAB}$
$\widehat{CAD} = \widehat{CBA}$
$AC^2 = CD.CB$
Cùng góc nhọn LỚN
Cùng góc nhọn NHỎ
Thế tứ giác nội tiếp
$\Delta ABC \sim \Delta AED$
$\Delta ADC \sim \Delta AEB$



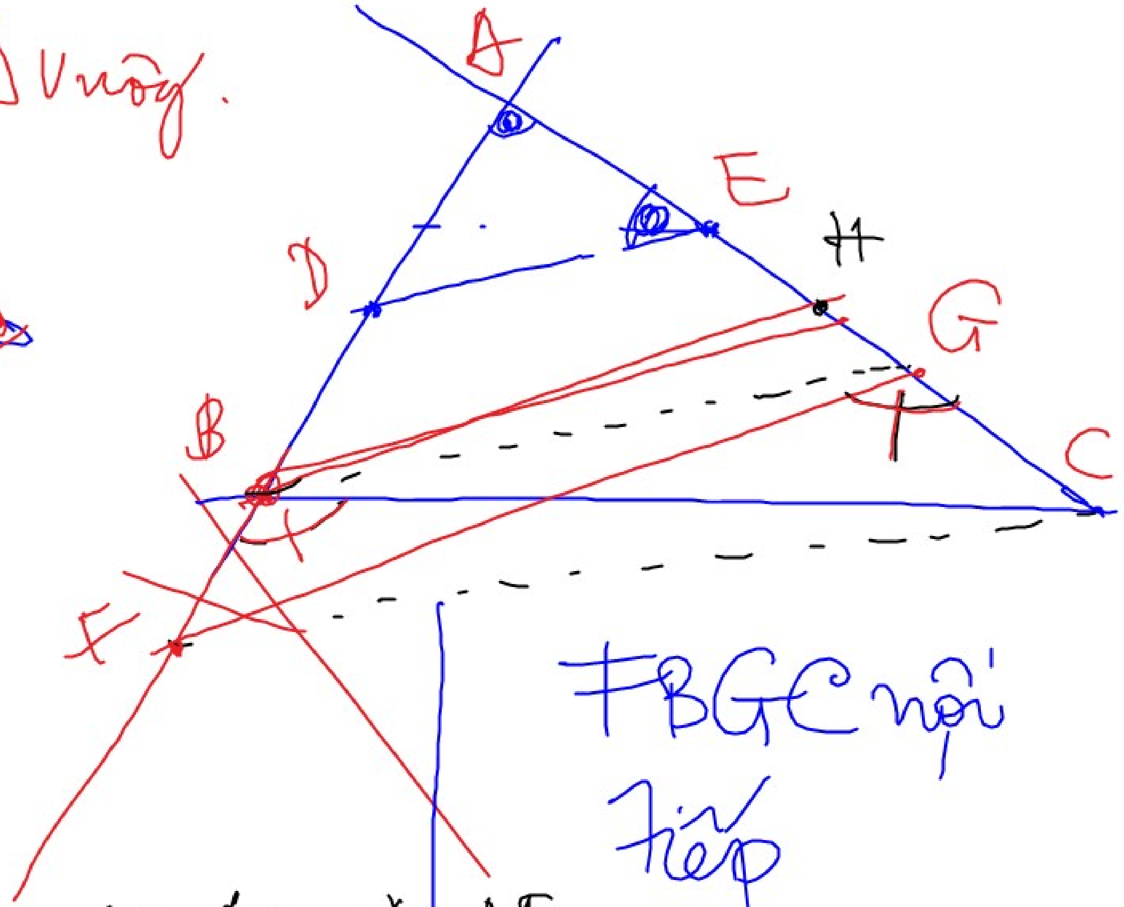
Thales



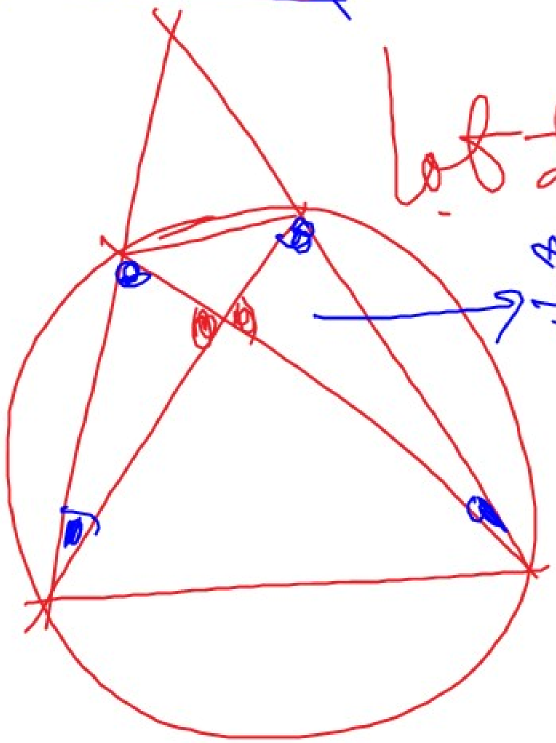
Bằng nhau



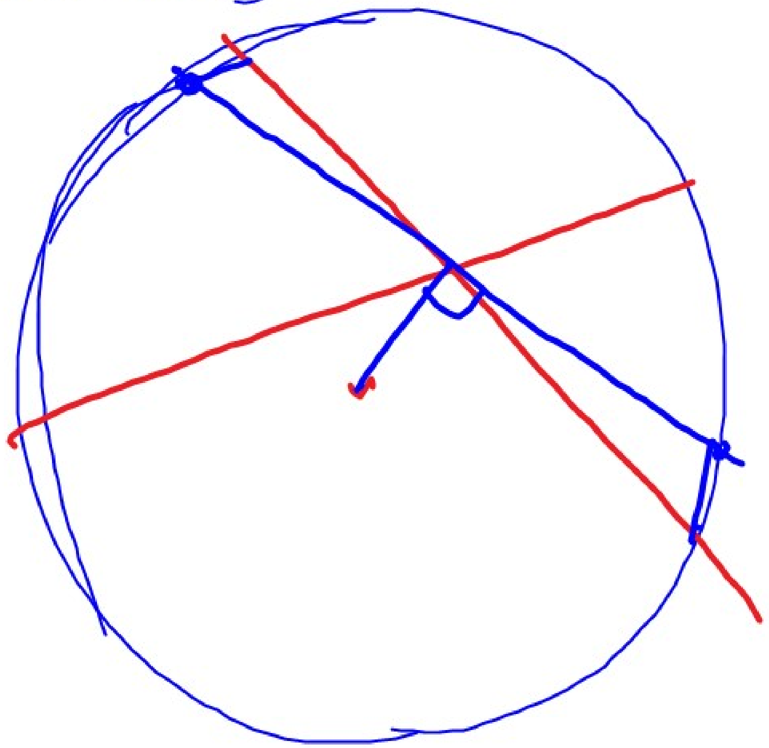
→ Δ vuông.



Lọt đít / Bướm



→ Đối đỉnh.



FBGC nội tiếp

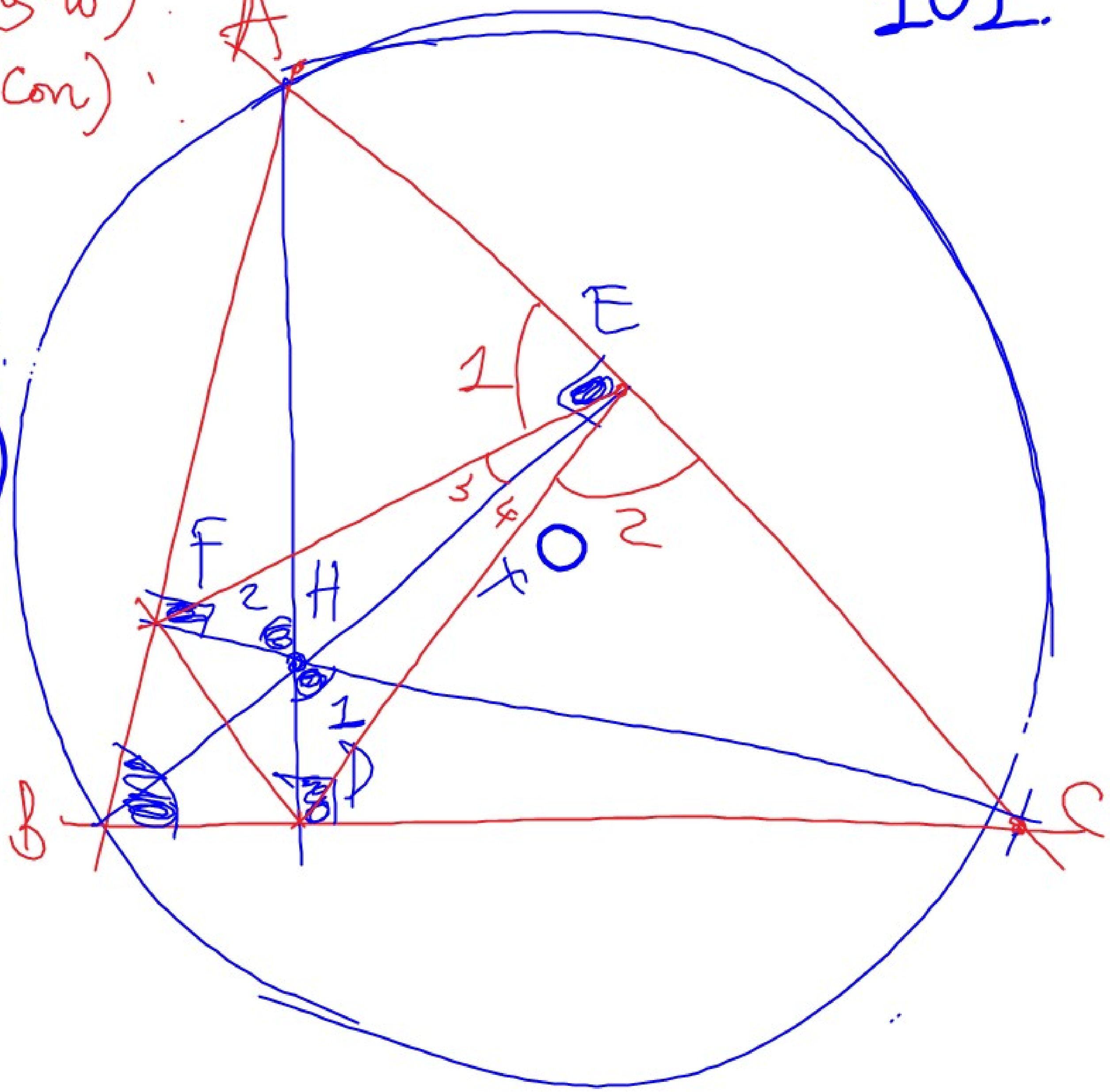
$AG.AZ = AB.AF$

$\frac{AG}{AF} = \frac{AB}{AC}$

$\Delta AGB \backsim \Delta AFC$

$\Delta AGF \backsim \Delta ABC$

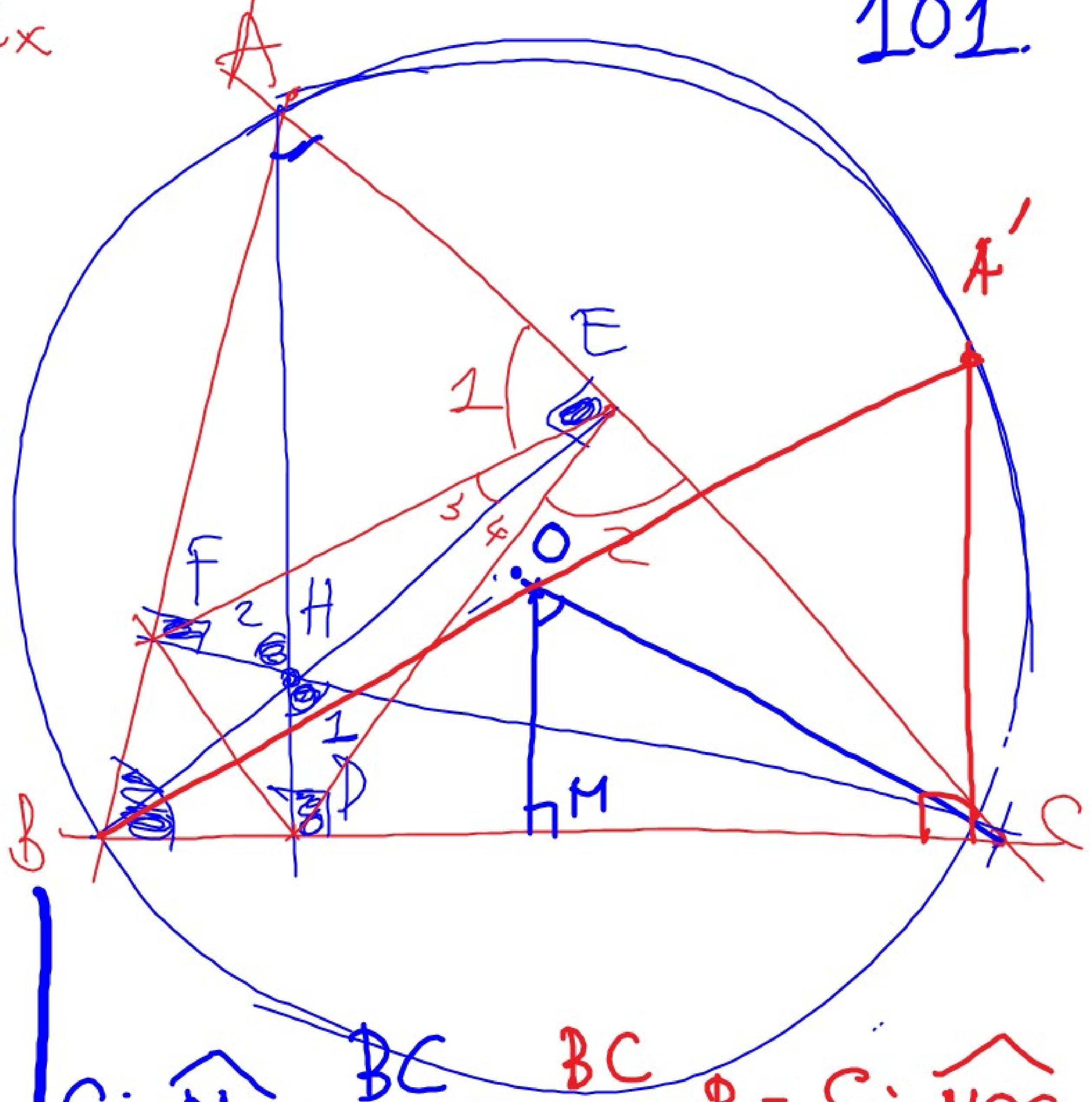
- $\Delta BDF \sim \Delta EDC \Rightarrow BD.DC = DF.DE$ (Bảng vừ)
- $BDA \sim \Delta HDC \Rightarrow BD.DC = DH.DA$ (Mẹ đẻ con)
- Lát tiết $\Delta BDA \sim \Delta BFC$
- $HFA \sim HDC$ (đối đỉnh → Bướm)
- $AF.AB = AH.AD = AE.AC$ (Bắt cây pt) (Cát tuyến chung)
- $\hat{B} = \hat{H_1} = \hat{H_2} = \hat{E_1} = \hat{E_2}$
- $\hat{E_3} = \hat{E_4}$ } Chân đường cao và đỉnh đối diện là tia phân giác
- $\widehat{FDE} = 2\widehat{FBE}$ x
- $\cos\hat{A} = \frac{EF}{BC}$



Phương Tích

$AF.AB = AH.AD = AE.AC$

101.

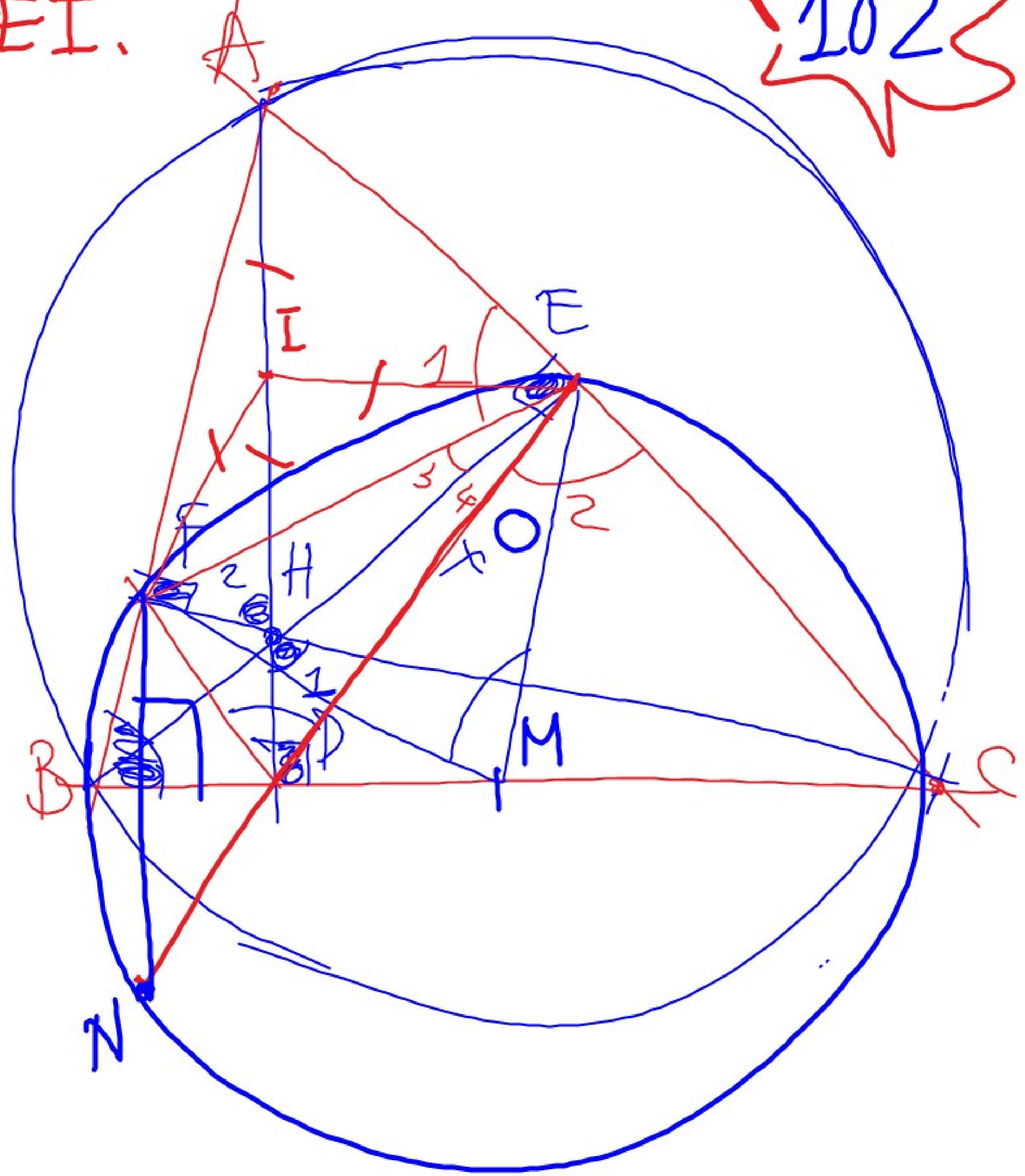


$\sin \widehat{BAC} = \frac{BC}{2R} = \frac{BC}{2} \cdot R = \sin \widehat{MOC}$.

$AH = BC \Rightarrow \widehat{BAC} = 45^\circ$

Euler (O'le)

- $\widehat{FDE} = 2\widehat{FDI} = 2\widehat{FEI}$.
- $FN \perp AB$.



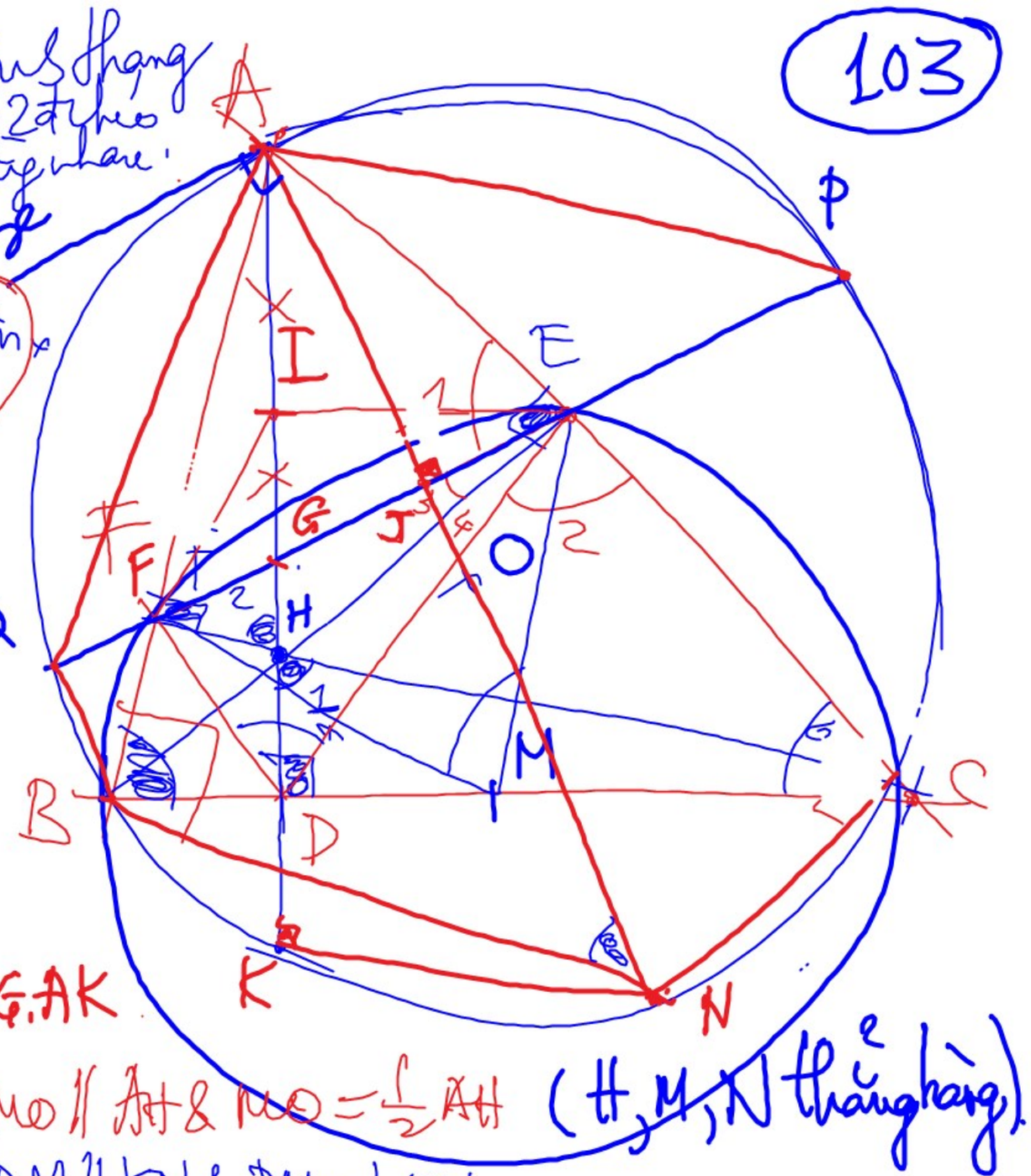
103

Δ NHON

BC là trung trực HK

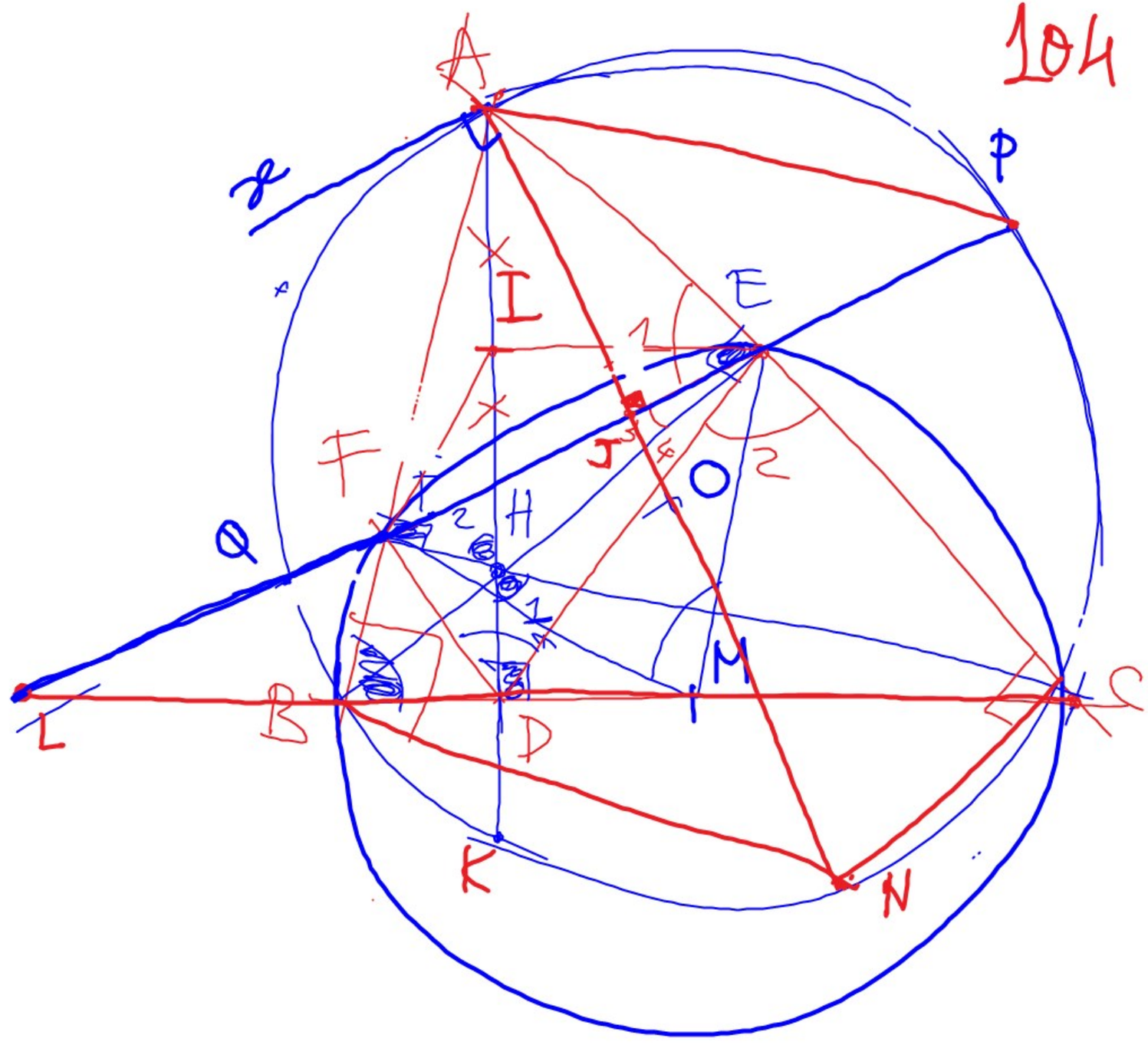
- HBNC là hình bình hành.
- HD = DK ⇒ ΔHCK cân và cs ΔFIH. Cân
- HC = CK = BN ⇒ BKNC là hình thang
- Δ vuông ADC cs Δ vuông ABN.
- $AH^2 + BC^2 = BH^2 + AC^2 = CH^2 + AB^2 = 4R^2$
- OA ⊥ EC (Kẻ thêm tiếp tuyến tại A để cm).
  ⇒ AN là trung trực PQ.
- $AP^2 = AE \cdot AC$ và $BQ^2 = BF \cdot BA$.
  ⇒ JECN & JFBN nội tiếp & KGJN
- $AF \cdot AB = AH \cdot AD = AE \cdot AC = AJ \cdot AN = AG \cdot AK$
- $AB \cdot AC = AD \cdot 2R$
- $AD^2 + DC^2 + DH^2 + DB^2 = 4R^2$.

Hình thang có 2 đỉnh kề bằng nhau.



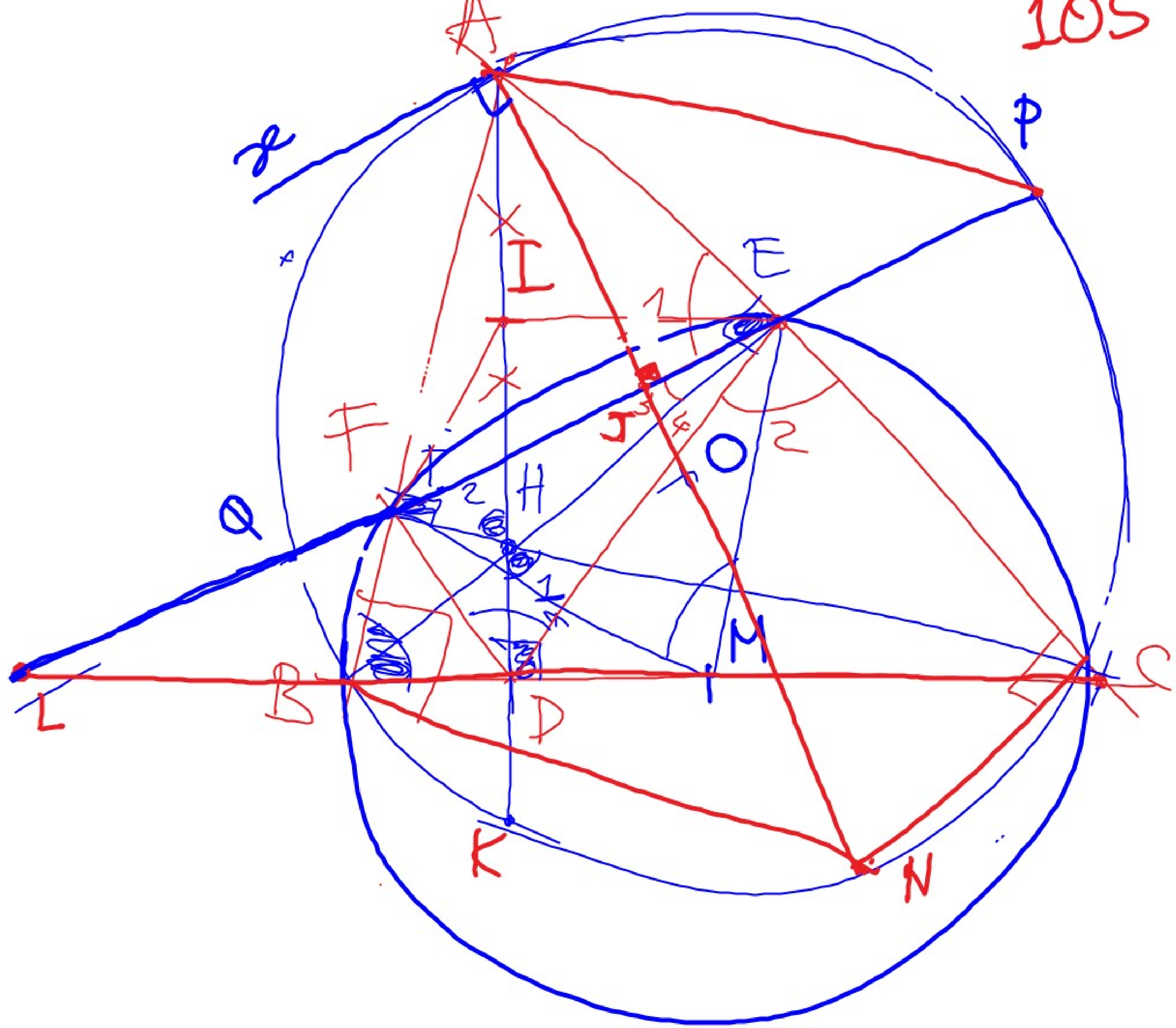
- MO // AH & MO = $\frac{1}{2}$AH (H, M, N thẳng hàng).
- DM // KN & DM = $\frac{1}{2}$KN

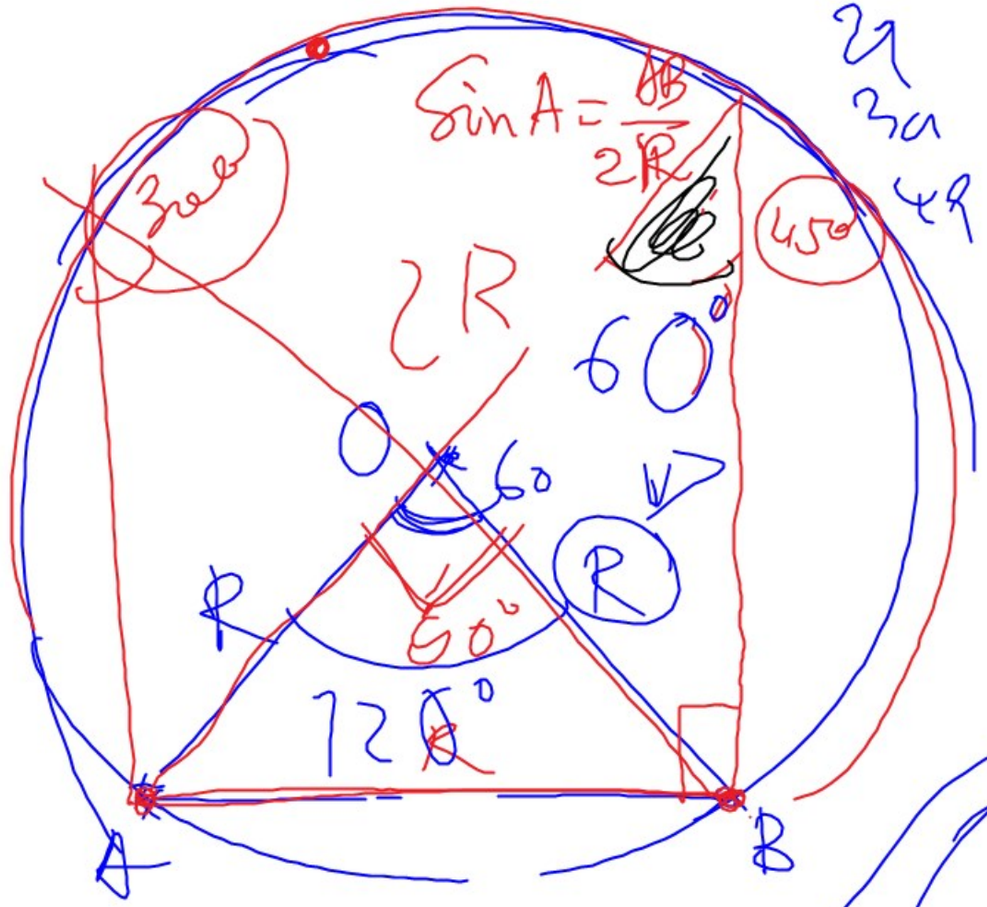
Sim Son / $S_{ABC} = \frac{AB \cdot AC \cdot BC}{4R}$



Simson

105

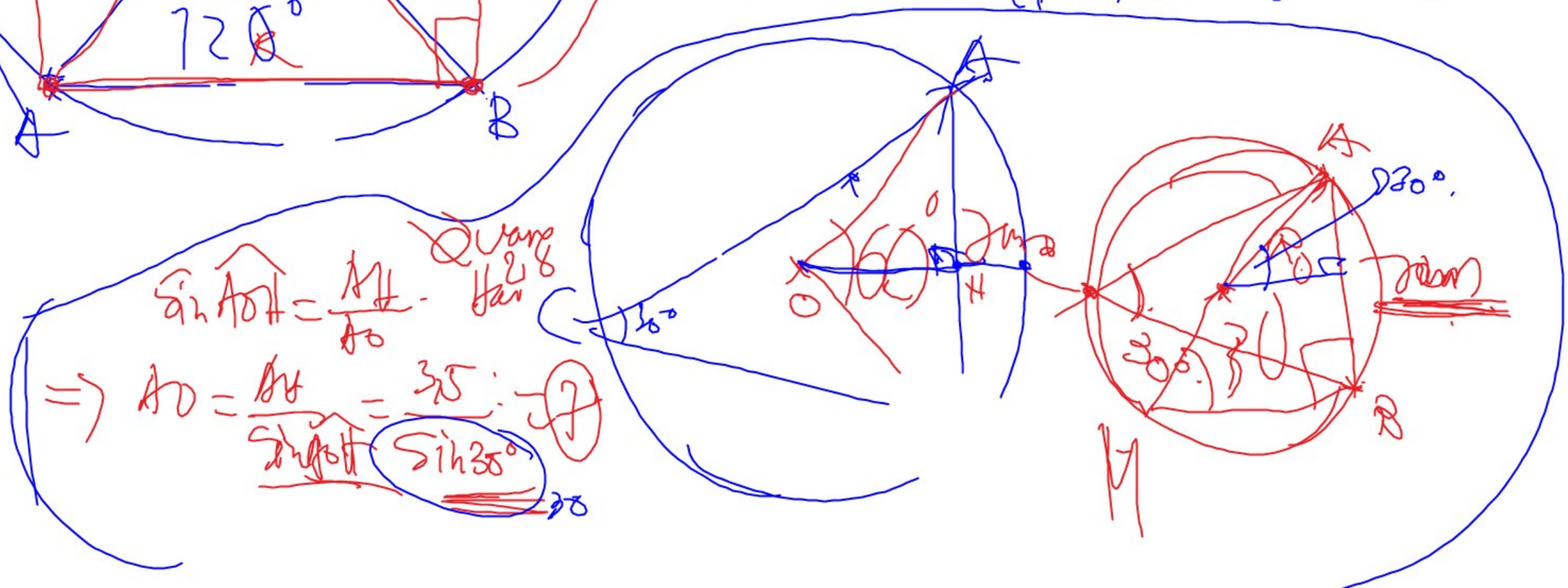




Độ dài cần tính AB	R	R√2	R√3
Góc AOB	60	90°	120°

$\Rightarrow \sin 45^\circ = \frac{AB}{2R} \Rightarrow AB = 2R \cdot \sin 45^\circ = 2R\frac{\sqrt{2}}{2}$

$\sin 60^\circ = \frac{AB}{2R} \Rightarrow AB = 2R \cdot \sin 60^\circ = \sqrt{3} \cdot R$



$x_0 \frac{x}{\sqrt{3}} = 2400$

$x^2 = 2400\sqrt{3}$

$x^2 = 4 \cdot 6 \cdot 10^2 \cdot \sqrt{3}$

$x = 2 \cdot 10 \cdot \sqrt{6} \cdot \sqrt{\sqrt{3}}$

$= 20\sqrt{6} \cdot \sqrt{\sqrt{3}}$

$\frac{R \cdot R\sqrt{3}}{2} = \frac{1200}{\sqrt{3}} = 400$

$R^2 = \frac{400}{\sqrt{3}} \Rightarrow R = \frac{20}{\sqrt{\sqrt{3}}} = \frac{20 \cdot \sqrt{\sqrt{3}}}{\sqrt{3}}$

$= 20\sqrt{3} \sqrt{\sqrt{3}}$

$\frac{20\sqrt{2} \cdot \sqrt{3}}{\sqrt{3}} \sqrt{\sqrt{3}}$

$\frac{1}{3} x^2 = 2400\sqrt{3}$

$x = 20\sqrt{6} \cdot \sqrt{3}$

$= 60\sqrt{2}$

$\Rightarrow R = \frac{1}{3} x = 20\sqrt{2}$

$2 \cdot 20\sqrt{2} \cdot \sqrt{\sqrt{3}}$