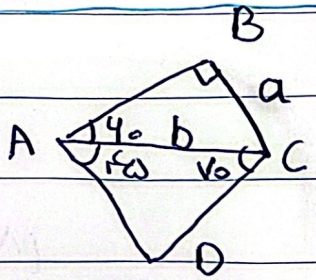
۱) $B+C=135 \rightarrow A=45$ سینوسی $\rightarrow \frac{b}{\sin B}=\frac{a}{\sin A} \rightarrow$

$\frac{\frac{30-\sqrt{6}}{2}}{\sin B}=\frac{30}{\sin A} \rightarrow \frac{\sqrt{2}}{2}$ ↳ $\sin B=\frac{\sqrt{2}}{2}$ $\Big\}$ $B=45$ $\quad 45+x=135$ $\quad x=90=C$ $\quad B=45$

۲)



$b \rightarrow \frac{DC}{\sin A}=\frac{AC}{\sin D} \rightarrow \frac{2\sqrt{2}}{\frac{\sqrt{2}}{2}}=\frac{b}{\frac{\sqrt{3}}{2}} \rightarrow b=2\sqrt{3}$

مثلث ABC $\rightarrow \sin 45=\frac{a}{b} \rightarrow \frac{a}{2\sqrt{3}} \rightarrow a=3$

۳) $\frac{c}{\sin C}=\frac{b}{\sin B} \rightarrow \frac{\sin C}{\sin B}=\frac{c}{b} \xrightarrow{\times(b^2-2)} \frac{\sin C}{\sin B}=\frac{c}{b}(b^2-2)$

$\frac{c}{b} \times b^2-2=c \quad b^2-b-2=0 \rightarrow b=-1$ ق ق $b=2$

۴) $\frac{b}{\cos} \rightarrow b^2=a^2+c^2-2ac\cos B \Rightarrow 149=441+400-2(42)\cos B$

$\cos B=0.8 \rightarrow \sin B=0.6$

۵) الف) $a^2=14+14+8\sqrt{3}-8-8\sqrt{3}=36 \rightarrow a=\frac{\sqrt{36}}{2\sqrt{6}}$

ب) $\frac{c}{\sin B}=\frac{2(1+\sqrt{3})}{\sin C}=\frac{2\sqrt{6}}{\frac{\sqrt{3}}{2}}\sqrt{2} \Rightarrow \sin B=\frac{\sqrt{2}}{2}$

↳ 45 $\quad C=75$

6)

$ABC \xrightarrow{\text{cos قضیه}} a^2 = b^2 + c^2 - 2bc\cos\alpha \to 4 = 5 - 4\cos\alpha$, $\cos\alpha \to \frac{1}{4}$

$ADE \to DE^2 = 36 + 16 - 48\cos\alpha \to DE = \sqrt{40}$, $\cos\alpha = \frac{1}{4}$

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7)

الف) $BC = \sqrt{64 + 25 - 80 \times \frac{1}{2}} = 7$ ($64+25 = 89$, $8\times 5 = 40$)

ب) $S = \frac{1}{2} \times 8 \times 5 \times \frac{\sqrt{3}}{2} = 10\sqrt{3}$

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8)

$$\frac{b^2 + c^2 + 2bc - (b^2 + c^2 - 2bc\cos A)}{bc(\cos A + 1)} = \frac{2bc(1+\cos A)}{bc(1+\cos A)} = 2$$

(قضیه cos : a^2)

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9)

$b^3 + a^3 - c^3 = a^3 + a^2 b - a^2 c \to (b-c)(b^2+bc+c^2)$

$\to a^2(b-c) = (b-c)(b^2+bc+c^2) \xrightarrow{\text{قطعا}} \cos A = -\frac{1}{2}$

$-2bc\cos A$ ، قضیه cos

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10)

$\frac{1}{4} \times (3 - \cos\theta) \times (1 + \cos\theta) = 2$

$-3\cos^2\theta + 8\cos\theta + 3 = 8 \to 3\cos^2 - \cos\theta \times 2 + 5 = 0$

$\cos\theta = 1$ ✓ یا $\cos\theta = \frac{5}{3}$ ✗ غقق

$a^2 = 4 + 16 - 16\frac{\sqrt{3}}{2} = 20 - 8\sqrt{3}$

s.a.m