نام و نام خانوادگی ..مهدیه بهادیان.......... ۲۰ پاسخنامه تشریحی تکلیف شماره ..۱۳.. کلاس دوازدهم تجربی A..........

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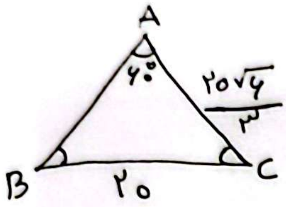

$\underbrace{B+C}_{120}+A=180 \to A=60°$

$\frac{20}{\underbrace{\sin A}_{\frac{\sqrt{3}}{2}}}=\frac{\frac{20\sqrt{6}}{3}}{\sin B} \to \sin B=\frac{20\sqrt{6}\times\sqrt{3}}{20\times3\times2}=\frac{3\sqrt{2}}{3\times2}=\frac{\sqrt{2}}{2} \to \hat{B}=45°$

$C+B=120 \to C+45=120 \to C=75°$

(۲)

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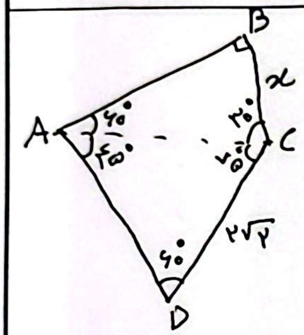

$\underbrace{\hat{A}+\hat{B}+\hat{C}+\hat{D}=360°}_{\text{چهارضلعی}} \to \hat{A}+90+60+105=360 \to \hat{A}=105$

$\frac{2\sqrt{2}}{\sin 45°}=\frac{AC}{\sin 60°} \to \frac{2\sqrt{2}}{\frac{\sqrt{2}}{2}}=\frac{AC}{\frac{\sqrt{3}}{2}} \to AC=2\sqrt{3}$

$\sin 60°=\frac{x}{AC}=\frac{\sqrt{3}}{2} \to \frac{x}{2\sqrt{3}}=\frac{\sqrt{3}}{2} \to x=3$

(۲)

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$\frac{a}{\sin A}=\frac{b}{\sin B}=\frac{c}{\sin C}=k \to b=k\sin B$ و $c=k\sin C$

$\frac{c(b^2-2)\sin C}{\sin B}=c \to \frac{c(b^2-2)\sin C}{\sin B}=k\sin C \to b^2-2=k\sin B=b$

$\to b^2-b-2=0 \to b=2$

$b=-1$ غ ق ق طول ضلع نمی‌تواند منفی باشد

(۲)

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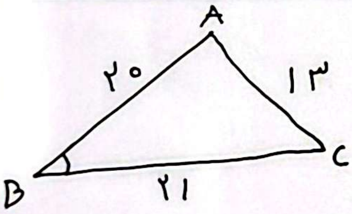

$AC^2=BC^2+BA^2-2BA\,BC\cos\hat{B}$

$13^2=21^2+20^2-2\times20\times21\cos\hat{B}$

$169=441+400-840\cos B \to 840\cos B=672$

$\to \cos B=0/8$

$\cos^2 B+\sin^2 B=1 \to \frac{16}{25}+\sin^2 B=1 \to \sin^2 B=\frac{9}{25} \to \sin B=0/6$

(۲)

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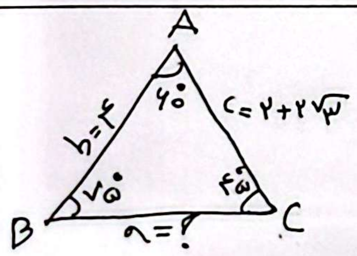

$a=\sqrt{AB^2+AC^2-2AB\,AC\cos 60°}=\sqrt{16+16+8\sqrt{3}-8-8\sqrt{3}}$

$=\sqrt{24}=2\sqrt{6}$

$\frac{2\sqrt{6}}{\sin 60°}=\frac{4}{\sin \hat{C}} \to \frac{\frac{4\sqrt{3}}{2}}{2\sqrt{6}}=\sin C \to \sin C=\frac{\sqrt{2}}{2} \to \hat{C}=45°$

$\hat{C}+\hat{A}+B=180 \to 45+60+B=180 \to B=75°$

(۲)

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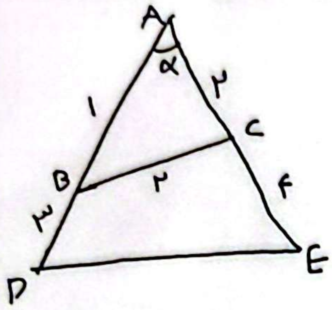

$BC^2=AB^2+AC^2-2AB\,AC\cos\alpha$

$4=4+1-4\cos\alpha \to \cos\alpha=\frac{1}{4}$

$DE^2=AD^2+AE^2-2AD\,AE\cos\alpha=16+36-48\times\frac{1}{4}$

$=40 \to DE=\sqrt{40}=2\sqrt{10}$

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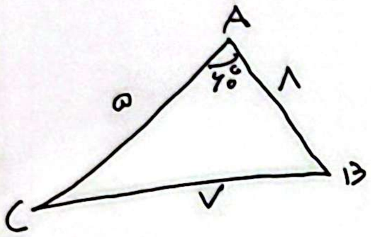

الف) $BC^2=AC^2+AB^2-2AC\,AB\cos 60^\circ$

$=25+64-80\times\frac{1}{2}=49 \to BC=7$

ب) $S=\frac{1}{2}\times AC\times AC\times\sin 60^\circ$

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

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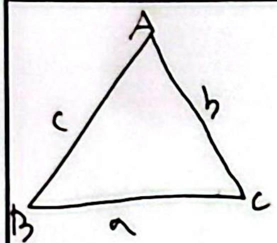

$\frac{(b+c)^2-a^2}{bc(\cos A+1)}$ $\quad a^2=c^2+b^2-2bc\cos\hat{A}$

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

$=\frac{2bc+2bc\cos\hat{A}}{bc(\cos A+1)}=\frac{2bc(1+\cos A)}{bc(\cos A+1)}=2$

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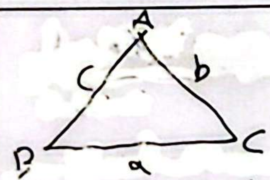

$a^2=b^2+c^2-2bc\cos\hat{A}$

$\frac{a^3+b^3-c^3}{a+b-c}=a^2 \to a^3+b^3-c^3=a^3+a^2b-a^2c$

$\to \underbrace{b^3-c^3}_{(b-c)(b^2+c^2+bc)}=a^2(b-c) \to b^2+c^2+bc=a^2$

$b^2+c^2+bc=b^2+c^2-2bc\cos\hat{A}$

$\to \cos\hat{A}=-\frac{1}{2} \to \hat{A}=120^\circ$

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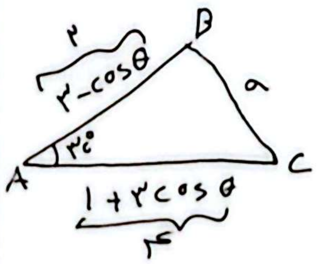

$S=2=\frac{1}{2}\times AB\times AC\times\sin 30^\circ \to 2=\frac{1}{4}\times(3-\cos\theta)(1+3\cos\theta)$

$\to (3-\cos\theta)(1+3\cos\theta)=8 \to 3+9\cos\theta-\cos\theta-3\cos^2\theta=8$

$\to 3\cos^2\theta-8\cos\theta+5=0 \to \Delta=(-8)^2-4\times5\times3=4$

$\cos\theta_{1,2}=\frac{8\pm 2}{6}$ → $\frac{10}{6}=\frac{5}{3}=\cos\theta$ ✗ - از یک بزرگتر است cos

→ $1=\cos\theta$ ✓

$a^2=AB^2+AC^2-2AB\,AC\cos 30^\circ=4+16-16\frac{\sqrt{3}}{2}=20-8\sqrt{3}$

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