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

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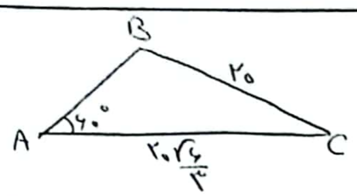

$B+C=120$
$A+B+C=180$ $\Rightarrow A=60$

$\Rightarrow \frac{BC}{\sin A}=\frac{AC}{\sin B} \Rightarrow \frac{20}{\frac{\sqrt{3}}{2}}=\frac{\frac{20\sqrt{6}}{3}}{\sin B}$

$\sin B=\frac{\sqrt{3}}{2}\times\frac{20\sqrt{6}}{3}\times\frac{1}{20}=\frac{\sqrt{2}}{2}$

$\Rightarrow B=45^\circ$

$C=120-45=75^\circ$

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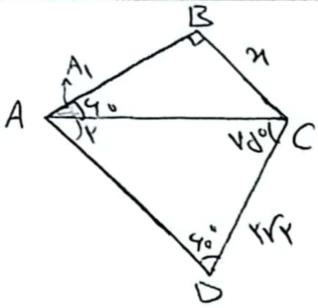

$BC=AC\times\sin A_1 \Rightarrow x=AC\times\frac{\sqrt{2}}{2} \Rightarrow AC=\frac{2x}{\sqrt{2}}$

$A_2+C+D=180 \Rightarrow A_2+75+60=180$

$A_2=45^\circ$

$\Rightarrow \frac{CD}{\sin A_2}=\frac{AC}{\sin D} \Rightarrow \frac{2\sqrt{3}}{\frac{\sqrt{2}}{2}}=\frac{\frac{2x}{\sqrt{2}}}{\frac{\sqrt{3}}{2}} \Rightarrow 2x=6$

$x=3$

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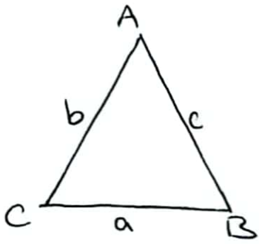

$\frac{c}{\sin C}=\frac{b}{\sin B} \Rightarrow c=b\,\frac{\sin C}{\sin B}$

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

$\Rightarrow b=b^2-2$

$b^2-b-2=0$

$(b-2)(b+1)=0$, $b>0$ $\Rightarrow b=2$

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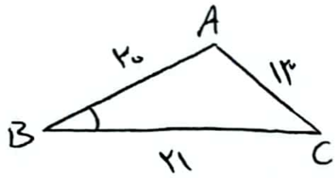

$AC^2=AB^2+CB^2-2AB\times CB\times\cos B$

$169=400+441-2\times20\times21\times\cos B$

$\cos B=\frac{841-169}{2\times20\times21}=0.8 \Rightarrow \sin B=\sqrt{1-\cos^2 B}$

$\sin B=\sqrt{1-\left(\frac{4}{5}\right)^2}=\frac{3}{5}=0.6$

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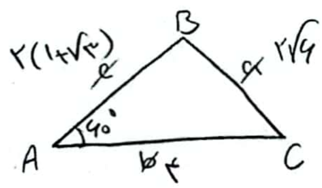


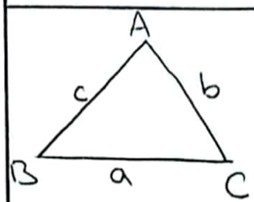
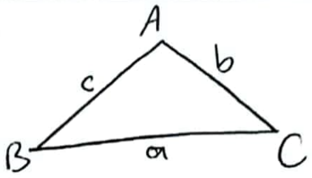
الف) $a^2=b^2+c^2-2bc\cos A$

$a^2=16+4(4+2\sqrt{3})-2\times4\times2(1+\sqrt{3})\times\frac{1}{2}=16+16+8\sqrt{3}-8-8\sqrt{3}=24$

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

ب) $\frac{c}{\sin C}=\frac{b}{\sin B}=\frac{a}{\sin A} \Rightarrow \frac{2(1+\sqrt{3})}{\sin C}=\frac{4}{\sin B}=\frac{2\sqrt{6}}{\frac{\sqrt{3}}{2}}=4\sqrt{2}$

$\Rightarrow \sin B=\frac{\sqrt{2}}{2} \Rightarrow B=45^\circ \Rightarrow C=180-60-45=75^\circ$

$BC^2=AB^2+AC^2-2\times AB\times AC\times \cos\alpha \Rightarrow 4=1+16-2\times1\times4\times\cos\alpha \Rightarrow \cos\alpha=\frac{1}{4}$ $DE^2=AD^2+AE^2-2\times AD\times AE\times\cos\alpha \Rightarrow 16+36-2\times4\times6\times\frac{1}{4}=52-12=40$ ضلع بزرگتر چهارضلعی BCED $DE=\sqrt{40}=2\sqrt{10}$	۶
الف) $BC^2=AB^2+AC^2-2AB\times AC\times\cos A \Rightarrow 64+25-8\times5\times2\times\cos 60\ \frac{1}{2}=49$ $BC=7$ ب) $S_{A\hat{B}C}=\frac{1}{2}\times AC\times AB\times\sin A \Rightarrow \frac{1}{2}\times5\times8\times\sin 60\ \frac{\sqrt{3}}{2}=10\sqrt{3}$	۷
 $\Rightarrow a^2=b^2+c^2-2bc\cos A$ $(b+c)^2-a^2=b^2+c^2+2bc-b^2-c^2+2bc\cos A=2bc(1+\cos A)$ $\frac{(b+c)^2-a^2}{bc(\cos A+1)}=\frac{2bc(1+\cos A)}{bc(1+\cos A)}=2$ $\neq 0$ ✓ $\neq 0$ ✓	۸
 $\frac{a^3+b^3-c^3}{a+b-c}=a^2 \Rightarrow a^3+b^3-c^3=a^3+a^2(b-c)$ $(b-c)(b^2+bc+c^2)=(b-c)(b^2+c^2-2bc\cos A)$ $a^2=b^2+c^2-2bc\cos A$ $\Rightarrow \cos A=-\frac{1}{2}$	۹
$S_{A\hat{B}C}=\frac{1}{2}AB\times AC\times\sin A \Rightarrow 2=\frac{1}{2}\times\frac{1}{2}\times(3-\cos\theta)(1+3\cos\theta)$ $3+9\cos\theta-\cos\theta-3\cos^2\theta$ $\Rightarrow -3\cos^2\theta+8\cos\theta+3=8 \Rightarrow 3\cos^2\theta-8\cos\theta+5=0$ مجموع ضرایب = 0 $\cos\theta=1$ ✓ $\Rightarrow 3-\cos\theta=2$, $1+3\cos\theta=4$ $\cos\theta=\frac{c}{a}=\frac{5}{3}$ غ ق ق $a^2=AB^2+AC^2-2AB\times AC\times\cos A$ $\Rightarrow a^2=4+16-2\times2\times4\times\frac{\sqrt{3}}{2} \Rightarrow a^2=20-8\sqrt{3}$	۱۰