نام و نام خانوادگی ...مبینا ... پاسخنامه تشریحی تکلیف شماره ...۱۳... کلاس ...ریاضی A...

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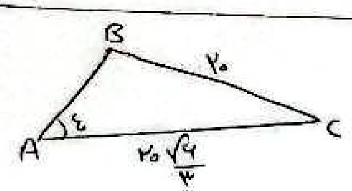

قضیه سینوس ها

$\frac{BC}{\sin A}=\frac{AC}{\sin B} \Rightarrow \frac{20}{\frac{\sqrt2}{2}}=\frac{20\frac{\sqrt6}{3}}{\sin B}$ ۱

$B+C=135$
$A+B+C=180 \Rightarrow 45=A$

$\sin B=\frac{\sqrt3}{2}$ زاویه حاده $\rightarrow B=60°$

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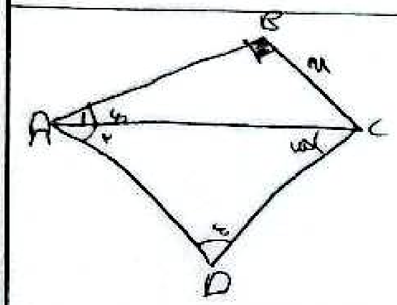
$45+60+\hat{C}=180 \rightarrow \boxed{C=75°}$



$BC=AC\times\sin A_1 \rightarrow x=AC\times\frac{\sqrt3}{2} \rightarrow AC=\frac{2x}{\sqrt3}$

$A_2+C+D=180 \rightarrow A_2+75+60=180 \rightarrow A_2=45$ ۲

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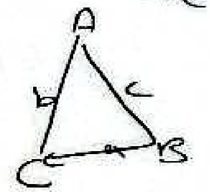
$\frac{CD}{\sin A_2}=\frac{AC}{\sin D} \rightarrow \frac{2\sqrt2}{\frac{\sqrt2}{2}}=\frac{\frac{2x}{\sqrt3}}{\frac{\sqrt3}{2}}=\frac{4x}{3}=4 \rightarrow x=3$

$\frac{c}{\sin C}=\frac{b}{\sin B} \rightarrow c=b\frac{\sin C}{\sin B}$



$c=(b^2-2)\frac{\sin C}{\sin B}$ $\Big\rangle$ $b=b^2-2\ ,\ b>0 \Rightarrow \boxed{b=2}$ ۳

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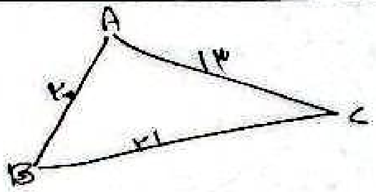

$AC^2=AB^2+CB^2-2AB\times BC\times\cos B$

$169=400+441-2\times20\times21\cos B$ ۴

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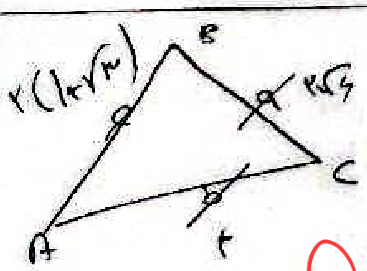
$\cos B=0/8$ $\boxed{\sin B=0/6}$



الف) $a^2=b^2+c^2-2bc\cos A$

$a^2=16+4(4+2\sqrt3)-2\times4\times2(1+\sqrt3)\times\frac12 \Rightarrow \sqrt{24}=a$

$a=2\sqrt6$ ۵

ب) $\frac{2(1+\sqrt3)}{\sin C}=\frac{4}{\sin B}=\frac{2\sqrt6}{\sin 60 = \frac{\sqrt3}{2}} \rightarrow \boxed{B=45°\ ,\ C=75°}$

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$BC^2=AB^2+AC^2-2AB\times AC\times\cos\alpha \longrightarrow 4=1+4-2\times1\times1\times2\times\cos\alpha \longrightarrow \cos\alpha=\frac{1}{4}$ ✓

$DE^2=AD^2+AE^2-2\times AD\times AE\times\cos\alpha \longrightarrow DE^2=84-44 \longrightarrow DE=\sqrt{40}=2\sqrt{10}$ ✓ ۶

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(الف) $BC^2=AB^2+AC^2-2AB\times AC\times\cos A \longrightarrow 64+25-2\times8\times5\times\cos60=49 \longrightarrow \boxed{BC=7}$ ✓

(ب) $S_{\overset{\triangle}{ABC}}=\frac{1}{2}\times AC\times AB\times\sin A \longrightarrow \frac{1}{2}\times5\times8\times\sin60=10\sqrt{3}$ ✓ ۷

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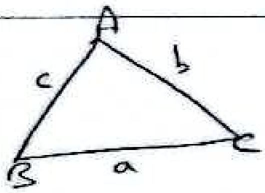

$a^2=b^2+c^2-2bc\cos A$

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

$\frac{\cancel{2bc}\cancel{(1+\cos A)}}{\cancel{2bc}\cancel{(1-\cos A)}}=2$ ✓ ۸

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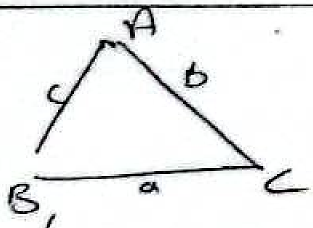

$\frac{a^3+b^3-c^3}{a+b-c}=a^2 \longrightarrow a^3+b^3-c^3=a^3+a^2(b-c)$

$(b-c)(b^2+bc+c^2)=(b-c)(b^2+c^2-2bc\cos A)$ ۹

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

۲

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

$S_{\overset{\triangle}{ABC}}=\frac{1}{2}AB\times AC\times\sin A \longrightarrow 2=\frac{1}{2}\times\frac{1}{2}\times(3-\cos\theta)(1+3\cos\theta)$

$-3\cos^2\theta+8\cos\theta+3=8 \longrightarrow 3\cos^2\theta-8\cos\theta+5=0 \longrightarrow \cos\theta=1$ ✓

$\cos\theta=\frac{5}{3}\times$ ۱۰

$a^2=4+16-2\times2\times4\times\frac{\sqrt{2}}{2}$

$3-\cos\theta=2$

$1+3\cos\theta=4$

$\boxed{a^2=20-8\sqrt{2}}$ ✓

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