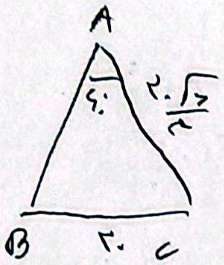
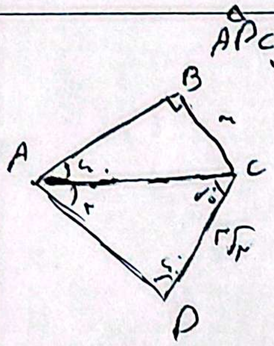
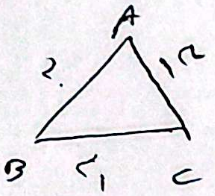
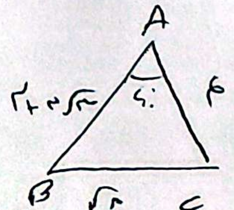
۱۱٫۵

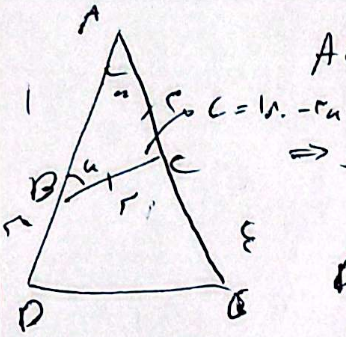
نام و نام خانوادگی ......[illegible]...... پاسخنامه تشریحی تکلیف شماره ...۱۳... کلاس ...دوازدهم ریاضی A...

۱	 $\hat A+\hat B+\hat C=180 \to A=60$; $\frac{2}{\frac{\sqrt3}{2}}=\frac{\frac{2\sqrt6}{3}}{\sin B}\to \sin\hat B=\frac{\sqrt2}{2}$, $\hat B=45°$ $\frac{a}{\sin A}=\frac{b}{\sin B} \Rightarrow \frac{4\sqrt3}{3}=\frac{\frac{2\sqrt6}{3}}{\sin B}\Rightarrow \sin B=\frac12 \Rightarrow \hat B=30$ ۰٫۵ $C=75°$ $\hat A+\hat B+\hat C=180$, $\hat A=60$, $\hat B=30 \to \hat C=90$
۲	 $\triangle ADC \to \hat A+\hat C+\hat D=180 \to \hat A=45$ ($\hat C=75$, $\hat D=60$) $\frac{DC}{\sin A}=\frac{AC}{\sin D}\to AC=3\sqrt3$ $\triangle ABC$: $\frac{BC}{\sin A}=\frac{AC}{\sin B}$ $BC=\frac{3\sqrt3}{2}$ ۲
۳	$(b^2-2)\frac{\sin\hat C}{\sin\hat B}=c \Rightarrow (b^2-2)\sin C=c\sin B \Rightarrow$ $(b^2-2)\sin C=b\sin C \Rightarrow b^2-2=b$ $\frac{c}{\sin C}=\frac{b}{\sin B}\Rightarrow c\sin B=b\sin C$ (I) ۲ $\Rightarrow b^2-b-2=0 \Rightarrow (b-2)(b+1)=0$ $b=-1 \to$ غ ق ق $b=2$ ✓
۴	 $b^2=a^2+c^2-2ac\cos\hat B$ ۲ $169=400+441-840\cos\hat B \Rightarrow \cos\hat B=\frac{841-169}{840}$ $\cos\hat B=\frac{672}{840}=\frac{84}{105}=\frac{28}{35}=\frac45 \to \sin B=\frac{\sqrt{5^2-4^2}}{5}=\frac35$
۵	الف)  $a^2=b^2+c^2-2bc\cos\hat A$ ۱ $\to a^2=16+16+8\sqrt3-(8+8\sqrt3)\cos A=$ $a^2=16+16+\cancel{8\sqrt3}-8-\cancel{8\sqrt3}=24 \to a=\sqrt{24}=2\sqrt6$ ✓ $\frac{2\sqrt6}{\frac{\sqrt3}{2}}=\frac{2+2\sqrt3}{\sin C}$; $\frac{1+\sqrt3}{\sin C}=2\sqrt2$ ب)

$\frac{2\sqrt6}{\sin 60}=\frac{4}{\sin\hat B}\to \sin\hat B=\frac{4\times\sqrt3/2}{2\sqrt6}=\frac{\sqrt2}{2}\to \hat B=45°$

$\hat C=75°$

i



$ABC \to \frac{a}{\sin A}=\frac{b}{\sin \hat{B}} \to \frac{3}{\sin\alpha}=\frac{1}{\sin(180-2\alpha)}$ ۲ ۶

$\Rightarrow \frac{3}{\sin\alpha}=\frac{1}{\sin 2\alpha} \to \frac{3}{\cancel{\sin\alpha}}=\frac{1}{2\cancel{\sin\alpha}\cos\alpha} \to \cos\alpha=\frac{1}{4}$ ✓

$DE \quad a^2=b^2+c^2-2bc\cos\alpha \to DE^2=36+16-\cancel{48\times\frac{1}{4}}$ ۱۲

$DE^2=40 \to DE=2\sqrt{10}$ ✓

الف) $a^2=b^2+c^2-2bc\cos \hat{A} \qquad a^2=49 \to a=7$ ✓ ۷

$64+25-\cancel{80}\ \cancel{\cos A}\ \frac{1}{2}$ ۲

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

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

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

$\boxed{=2}$ ۰

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

$b^3-c^3=a^2(b-c) \to (b-c)(b^2+c^2+bc)=a^2(b-c)$ ۹

$\begin{cases} a^2=b^2+c^2+bc \\ a^2=b^2+c^2-2bc\cos A \end{cases} \to \cos A=\frac{-1}{2} \to \hat{A}=120^\circ$ ۰

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

$8-3-\cos\theta-3\cos^2\theta+9\cos\theta+3\cos^2\theta-8\cos\theta+5=0$ ۱۰

$\cos^2\theta-8\cos\theta+15=0 \to \begin{cases}\cos\theta=1 \ ✓ \\ \cos\theta=\frac{5}{3}\ ✗\end{cases}$ ۰

$a^2=4^2+2^2-2\times4\times\frac{\sqrt{3}}{2}\times2 \to \boxed{a^2=20-8\sqrt{3}}$