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

۱۷/۵

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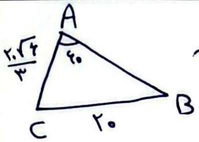


$\longrightarrow \frac{20}{\sin 60} = \frac{\frac{20\sqrt{6}}{30}}{\sin\hat{B}} \longrightarrow \sin\hat{B} = \frac{\sqrt{3}}{2}\times\frac{\sqrt{6}}{3} = \frac{\sqrt{2}}{2} \longrightarrow \hat{B}=45$

$\hat{C} = 120-\hat{B} \longrightarrow \hat{C}=75^\circ, \hat{B}=45^\circ$ ✓ ✓

(۲)

۲

$\frac{2\sqrt{2}}{\sin 45} = \frac{AC}{\frac{\sqrt{3}}{2}} \longrightarrow \frac{2\sqrt{2}}{\frac{1}{\sqrt{2}}} = \frac{AC}{\frac{\sqrt{3}}{2}} \longrightarrow AC = 2\sqrt{3}$

$x = \frac{\sqrt{3}}{2}\times 2\sqrt{3} = 3$ ✓

(۲)

۳

$\frac{\sin C}{C} = \frac{\sin B}{B} \Longrightarrow \frac{\sin C}{\sin B} = \frac{C}{B}$

$(b^2-2) \longrightarrow b^2-b-2=0$

$(b-2)(b+1)=0 \begin{cases} b=-1 & \text{غ ق ق} \\ b=2 & ✓ \end{cases}$ ✓

(۲)

۴

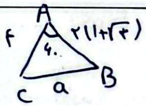
$AC^2 = AB^2+BC^2-2AB\times BC\times\cos B \longrightarrow 169 = 400+441-840\cos B$

$\cos B = \frac{672}{840} = \frac{4}{5}$ ✓ $\longrightarrow \sin\hat{B} = \frac{3}{5}$ ✓

(۲)

۵

الف)



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

$a = \sqrt{16+16+8\sqrt{3}-8-8\sqrt{3}} = \sqrt{24}$

$a = 2\sqrt{6}$ ✓

ب)

$\frac{a}{\sin A} = \frac{b}{\sin B} \Rightarrow \frac{2\sqrt{6}}{\frac{\sqrt{3}}{2}} = \frac{4}{\sin B}$

$\sin B = \frac{\sqrt{2}}{2} \rightarrow B = 45^\circ$ ✓

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

$\hat{C} = 180-(60+45) = 75^\circ$

(۱/۷۵)

$f = 1+4-2\times1\times2\cos\alpha \rightarrow \cos\alpha = \frac{1}{4}$ ✓

$16+36-2\times4\times6\times\frac{1}{4} \rightarrow 36+16-24=48$

$\sqrt{48} = 4\sqrt{3}$ ✓

۶

(۲)

الف)

$BC = \sqrt{AB^2+AC^2-2AB\times AC\times\cos A}$

$BC = \sqrt{25+16-2\times\frac{1}{2}\times5\times8}$

$BC = \sqrt{41-40} \rightarrow BC=9$

$\hookrightarrow BC=7$

ب)

$S_\Delta = \frac{1}{2}AB\times AC\times\sin A$

$S_\Delta = 5\times8\times\frac{\sqrt{3}}{2}\times\frac{1}{2} = 10\sqrt{3}$ ✓

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(۱/۷۵)

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

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

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

(۲)

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

۸

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

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

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

۹

(۵)

$\frac{1}{2}\times\sin30^\circ\times(2-\cos\theta)(1+2\cos\theta) = 2$

$\frac{1}{2}$

$2-2\cos^2\theta-\cos\theta = 1 \Rightarrow 2\cos^2\theta-\cos\theta+3=0 \rightarrow (2\cos\theta-3)(\cos\theta-1)$

$a^2 = 4+12-2\times2\sqrt{3}\times2\times\frac{\sqrt{3}}{2} \rightarrow a^2 = 28-24$

(۲)

$\cos\theta = \frac{3}{2}$ ✗ $\cos\theta = 1$ ✓

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