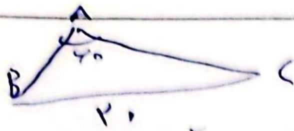
نام و نام خانوادگی ......علی بساطی........ پاسخنامه تشریحی تکلیف شماره ..۳.۱.. کلاس ...یازدهم ریاضی A........



$\Rightarrow \hat{A} = 180 - 120 = 60 \Rightarrow \frac{a}{\sin A} = \frac{b}{\sin B}$

$\Rightarrow \frac{20}{\sqrt{3}} = \frac{4 \times 1}{\sqrt{3}} = \frac{20\sqrt{6}}{3x} \Rightarrow 3\sqrt{2} = 6x \Rightarrow x = \sin B = \frac{\sqrt{2}}{2} \Rightarrow \boxed{\hat{B} = 45}$

$\hat{C} = 180 - 45 - 60 = \boxed{75}$

$\hat{A}_1 = 60 \Rightarrow \hat{A}_2 = 180 - 60 - 75 = 45 \Rightarrow DC = \frac{\sqrt{3}}{2} AC \Rightarrow$ (AC وتر)

$\Rightarrow \frac{AC}{\sin D} = \frac{DC}{\sin A} \Rightarrow \frac{AC}{\frac{\sqrt{3}}{2}} = \frac{2\sqrt{2}}{\frac{1}{\sqrt{2}}} \Rightarrow \frac{2AC}{\sqrt{3}} = 4 \Rightarrow AC = 2\sqrt{3}$ ۲

$x = \frac{\sqrt{3}}{2} AC = \frac{\sqrt{3}}{2} \times 2\sqrt{3} = \boxed{3}$

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

$\Rightarrow (b^2 - 2)\frac{c}{b} = c \Rightarrow \frac{b^2 - 2}{b} = 1 \Rightarrow b^2 - b - 2 = 0 \rightarrow b = -1$ غ ق ، $\boxed{b = 2}$ ۳

$b^2 = a^2 + c^2 - 2ac\cos B \Rightarrow 169 = 400 + 441 - 840\cos B$

$\Rightarrow 840\cos B = 672 \Rightarrow \cos B = \frac{4}{5} \Rightarrow 1 - \cos^2 B = \sin^2 B$ ۴

$\boxed{\sin \hat{B} = \sqrt{1 - \frac{16}{25}} = \sqrt{\frac{9}{25}} = \frac{3}{5}}$

$a^2 = \sqrt{16 + 16 + 8\sqrt{3} - ((16 + 16\sqrt{3}) \times \frac{1}{2})} \Rightarrow a = \sqrt{32 + 8\sqrt{3} - 8 - 8\sqrt{3}} = \sqrt{24} = \boxed{2\sqrt{6}}$

$\frac{a}{\sin A} = \frac{b}{\sin B} \Rightarrow \frac{2\sqrt{6}}{\frac{\sqrt{3}}{2}} = \frac{4}{\sin B} \Rightarrow 4\sqrt{2} = \frac{4}{\sin B} \Rightarrow \sin \hat{B} = \frac{1}{\sqrt{2}}$ ۵

$\Rightarrow \boxed{\hat{B} = 45}$ و $\hat{C} = 180 - 60 - 45 = 75$

$BC^2 = AB^2 + AC^2 - 2\times AB\times AC\times \cos\alpha \Rightarrow 4 = 5 - 4\cos\alpha \Rightarrow \cos\alpha = \frac{1}{4}$

$\Rightarrow DE^2 = AD^2 + AE^2 - 2AE\times AD\times \cos\alpha \Rightarrow DE^2 = 16+36-12 = 40$ ۶

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

$a = \sqrt{b^2+c^2-2bc\cos A} = \sqrt{25+64-40} = \sqrt{49} = \boxed{7}$ الف)

ب) $S_{ABC} = \frac{1}{2} b\times c\times \sin\theta = \frac{1}{2}\times 8\times 5\times \frac{\sqrt{3}}{2} = \boxed{10\sqrt{3}}$ ۷

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

$\Rightarrow \frac{2bc+2bc\cos A}{bc(\cos A+1)} = \frac{2bc(\cos \hat{A}+1)}{bc(\cos\hat{A}+1)} = 2$ ۸

اثبات بازگشتی

$\frac{a^3 + (b-c)(b^2+c^2+bc)}{b+a-c} \Longleftrightarrow \frac{a^2(b+a-c)}{(b+a-c)} \Longleftrightarrow a^2$ ۹

پس فقط زمانی برقرار است که b^2+c^2+bc برابر با a^2 باشد پس

$a^2 = b^2+c^2+bc \Rightarrow \cos_A = -\frac{1}{2}$

$S = \frac{1}{2} b\times c\times \frac{1}{2} = 2 \Rightarrow bc = 8 = (3-t)(1+3t) = -3t^2+8t+3$

$\Rightarrow -3t^2+8t-5=0 \to \cos\theta = 1$ ✓ ; $\cos\theta = \frac{5}{3}$ ✗ $\Rightarrow AB = 2$, $AC = 4$ ۱۰

$a^2 = 4+16-\left(2\times 2\times 4\times \frac{\sqrt{3}}{2}\right) = 20 - 8\sqrt{3}$