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نام و نام خانوادگی آرین حبیبی الهی پاسخنامه تشریحی تکلیف شماره ۱۳ کلاس شنبه دوازدهم

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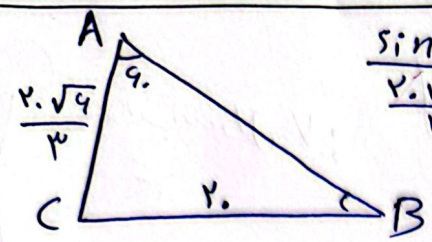

$\frac{\sin\hat{B}}{\frac{20\sqrt{6}}{3}} = \frac{\sin\hat{A}}{20}$

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

$\sin\hat{A} = \sin 60 = \frac{\sqrt{3}}{2}$

$\sin\hat{B} = \frac{\sqrt{2}}{2} \Rightarrow \hat{B} = 45$ ✓

$120 - 45 = 75 = \hat{C}$ ✓

$B + C = 120$

$A = 60$

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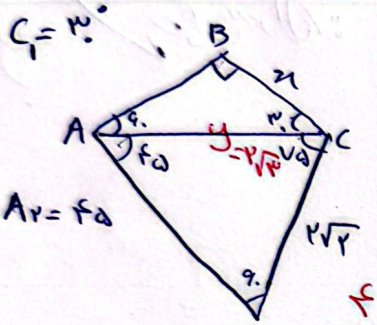
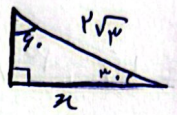


$x = \sin 60 \times 2\sqrt{3}$

$\sin 45 = \frac{\sqrt{2}}{2}$

$\sin 60 = \frac{\sqrt{3}}{2}$



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

$x = 3$ ✓

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$\frac{2\sqrt{2}}{\frac{\sqrt{2}}{2}} = \frac{y}{\frac{\sqrt{3}}{2}}$

$y = 2\sqrt{3}$

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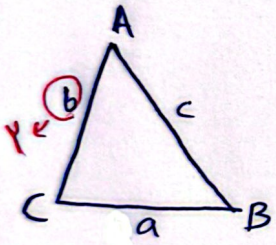

$\frac{c}{\sin C} = \frac{b}{\sin B}$

تعمیم ←

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

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

$(b^2 - 2) = b$

$b^2 - b - 2 = 0$

$b = -1, 2$ ← غ ق ق

$b = 2$ ✓

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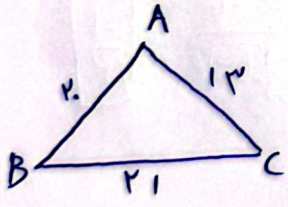

$(13)^2 = (20)^2 + (21)^2 - 2(20)(21)\cos B$

$169 = 400 + 441 - 2(20)(21)\cos B$

$\cos B = \frac{672}{840} = \frac{4}{5}$

$\sin_B = \sqrt{1 - \cos_B^2}$

$\sqrt{\frac{9}{25}} = \frac{3}{5} = \sin B$ ✓

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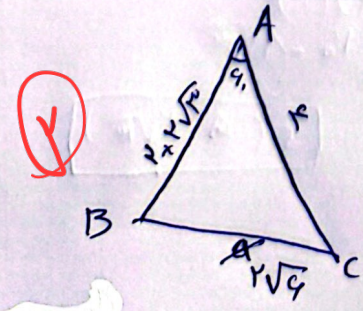

$\cos 60 = \frac{1}{2}$

$a^2 = (4)^2 + (2+2\sqrt{3})^2 - 2(4)(2+2\sqrt{3})(\cos 60)$

$a^2 = 16 + 4 + 12 + 8\sqrt{3} - 8 - 4\sqrt{3}$

$a^2 = 24$

$a = \sqrt{24} = 2\sqrt{6}$ ✓

الف

$\sin B = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$

$B = 45$ ✓

$\frac{\frac{\sqrt{3}}{2}}{2\sqrt{6}} = \frac{\sin B}{4}$

$\sin 60 = \frac{\sqrt{3}}{2}$

$C = 75$ ✓

ب

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الف)

$BC^2 = 25 + 64 - 2(\frac{1}{2})(5)(8)$ ← ۴۰

$\cos 60 = \frac{1}{2}$

$BC^2 = 49$, $\boxed{BC = 7}$ ✓

جواب سوال ۷:

ب)

$\frac{1}{2} \times 5 \times 8 \times \frac{\sqrt{3}}{2} = \boxed{10\sqrt{3}}$ ✓

$\sin 60 = \frac{\sqrt{3}}{2}$

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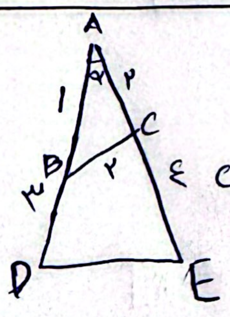
جواب سوال ۶:



$4 = 1 + 4 - 4\cos\alpha$

$4\cos\alpha = \frac{1}{4}$ ✓

$(DE)^2 = 16 + 36 - 2(\frac{1}{4})(4)(6)$ ← ۱۲

$DE^2 = 40 \quad DE = \sqrt{40} = \boxed{2\sqrt{10}}$ ✓

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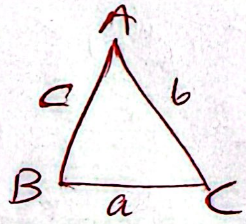
$a^2 = b^2 + c^2 - 2bc\cos\hat{A} \rightarrow \frac{b^2 + c^2 + 2bc - b^2 - c^2 + 2bc\cos\hat{A}}{bc(\cos A + 1)}$

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

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



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$a^4 + b^3 - c^3 = a^4 + a^2b - a^2c \qquad a^2 = b^2 + c^2 - 2bc\cos\hat{A}$

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

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

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

$c - b = \cos A(2b - 2c)$

$\cos\hat{A} = \frac{c-b}{2b-2c} = \frac{c-b}{-2(c-b)} = \boxed{\frac{-1}{2}}$ ✓

$\hat{A} = 120$

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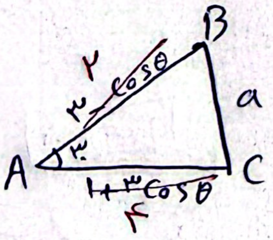

$\sin 30 = \frac{1}{2} \quad \cos 30 = \frac{\sqrt{3}}{2}$

$a^2 = 4 + 16 - (\frac{\sqrt{3}}{2})(2)(4)(2)$

$a^2 = 20 - 8\sqrt{3}$ ✓

$\boxed{4(5 - 2\sqrt{3})}$

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

$3 + 8\cos\theta - 3\cos^2\theta = 8$

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

$\cos\theta = 1$ ✓ $\qquad \cos\theta = \frac{5}{3}$ غ ق ق

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