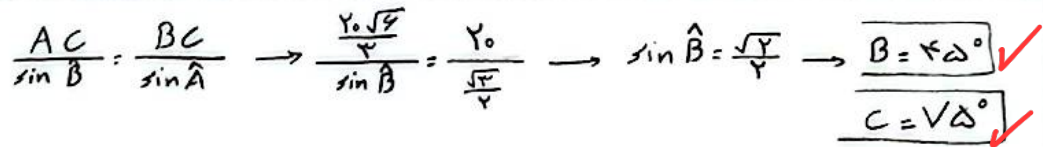
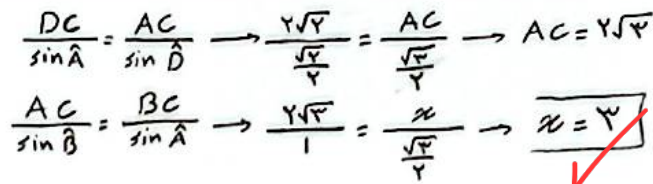


$$Y_0$$


Q



③

$$\frac{b}{\sin \hat{\beta}} = \frac{c}{\sin \hat{\epsilon}} \rightarrow b \frac{\sin \hat{\epsilon}}{\sin \hat{\beta}} = c$$

$$(b^Y - Y) \frac{\sin \hat{\epsilon}}{\sin \hat{\beta}} = c \rightarrow (b^Y - Y) \frac{\sin \hat{\epsilon}}{\sin \hat{\beta}} = b \frac{\sin \hat{\epsilon}}{\sin \hat{\beta}} \rightarrow b^Y - Y = b$$

$$b^Y - b - Y = 0 \rightarrow \begin{cases} b = Y \\ b = -1 \end{cases}$$

③

$$AC^2 = AB^2 + BC^2 - 2AB \cdot BC \cos \hat{B}$$

$$149 = 400 + 441 - 2(20)(21) \cos \hat{B}$$

$$\cos \hat{B} = \frac{4}{7} \rightarrow \sin \hat{B} = \frac{3}{7}$$

Q

$$a = \sqrt{14 + 14 + 14\sqrt{3} - 4 \times 4 \times 4(1 + \sqrt{3})} \times \frac{1}{4} = \sqrt{4} = 2 \quad \checkmark$$

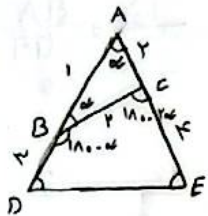
الف

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

$$\frac{\frac{\sqrt{5}}{\sqrt{2}}}{\frac{\sqrt{2}}{\sqrt{2}}} = \frac{r}{\sin B} = \frac{r(1+\sqrt{5})}{\sin C} \rightarrow \sin B = \frac{\sqrt{2}}{\sqrt{2}} \rightarrow \boxed{B = 45^\circ} \quad \boxed{C = 100^\circ}$$

۵ | بـ

Q



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

$$Y = \sqrt{10 - Y \cos \alpha} \rightarrow \cos \alpha = \frac{1}{Y} \quad \text{✓}$$

$$DE = \sqrt{AD^2 + AE^2 - 2AD \cdot AE \cos \hat{A}} = \sqrt{1^2 + 3^2 - 2(1)(3)\left(\frac{1}{Y}\right)} = \sqrt{10 - \frac{6}{Y}} \quad \text{✓}$$

الف) $BC = \sqrt{AB^2 + AC^2 - 2AB \cdot AC \cos A} = \sqrt{4^2 + 2^2 - 2 \times 4 \times 2 \times \frac{1}{Y}} = \sqrt{V} \quad \text{✓}$

ب) $S_{ABC} = \frac{1}{Y} \times 4 \times 2 \times \frac{\sqrt{V}}{Y} = \frac{10\sqrt{V}}{Y^2} \quad \text{✓}$

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

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

$$a^2 + b^2 - c^2 = a^2 + b^2 - ca^2 \rightarrow b^2 - c^2 = a^2(b - c) \rightarrow b^2 + c^2 + bc = a^2 \rightarrow b^2 + c^2 + bc = b^2 + c^2 - 2bc \cos \hat{A} \rightarrow -\frac{1}{Y} = \cos \hat{A} \rightarrow \hat{A} = 110^\circ \quad \text{✓}$$

$$a^2 = (Y - \cos \theta)^2 + (1 + Y \cos \theta)^2 - 2(Y - \cos \theta)(1 + Y \cos \theta) \times \frac{\sqrt{Y}}{Y}$$

$$a^2 = 10 \cos^2 \theta + 10 - 18\sqrt{Y} = Y - 18\sqrt{Y} \quad \text{✓}$$

$$S = \frac{1}{Y} (Y - \cos \theta)(1 + Y \cos \theta) \times \frac{1}{Y} = Y \rightarrow (Y - \cos \theta)(1 + Y \cos \theta) = 1$$

$$Y + 1 \cos \theta - Y \cos^2 \theta = 1 \rightarrow Y \cos^2 \theta - 1 \cos \theta + 1 = 0 \rightarrow \cos^2 \theta - 1 \cos \theta + 1 = 0$$

$$\begin{aligned} Y - \cos \theta > 0 &\rightarrow Y > \cos \theta \\ 1 + Y \cos \theta > 0 &\rightarrow \cos \theta > -\frac{1}{Y} \end{aligned} \quad \left. \begin{aligned} -1 \leq \cos \theta \leq 1 \\ -\frac{1}{Y} \cos \theta \leq 1 \end{aligned} \right\} \cos \theta \in \left\{ \frac{1}{Y}, 0, 0, \dots \right\}$$