

سه شنبه ۲۱ شوال ۱۴۴۵

۱۴۰۳/۲/۱۱

اردیبهشت

$$\hat{A} = 11^\circ - 12^\circ = 90^\circ$$

$$\frac{BC}{\sin \hat{A}} = \frac{AC}{\sin \hat{B}}$$

-۱

$$\frac{2 \times 2}{\sqrt{2}} = \frac{2 \cdot \sqrt{2}}{2 \sin \hat{B}} = \sin \hat{B} = \frac{2 \cdot \sqrt{2}}{2 \times 2} = \frac{\sqrt{2}}{2} \Rightarrow \hat{B} = 45^\circ, \hat{C} = 45^\circ$$

.7

$$\frac{\sqrt{2}}{\sin 45^\circ} = \frac{AC}{\sin 45^\circ} \Rightarrow AC = \sqrt{2} / 1 = AC \cdot \sin 45^\circ \Rightarrow \sqrt{2} = 1$$

-۲

.9

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

-۳

.10

$$(b^2 - 1) \frac{\sin C}{\sin B} = c = \frac{c \cdot k \sin C}{\sin B} \Rightarrow \frac{(b^2 - 1)}{\sin B} = k \Rightarrow b^2 - 1 = k \sin B = b \Rightarrow$$

.12

$$b^2 - b - 1 = 0 \Rightarrow (b - 1)(b + 1) = 0 \Rightarrow b = 1$$

$$b^2 = a^2 + c^2 - 2ac \cos \hat{B} = 149 = 221 + 200 - 18 \cos \hat{B} \Rightarrow$$

-۴

.13

$$\Rightarrow 972 = 18 \cos \hat{B} \Rightarrow \cos \hat{B} = 0.18 \Rightarrow \sin \hat{B} = 1 - (0.18)^2, 0.18 = \sin \hat{B}$$

.14

$$a^2 = b^2 + c^2 - 2bc \cos \hat{A} = 14 + 14 + 18\sqrt{2} - 18 - 18\sqrt{2} = 22 \Rightarrow$$

-۵

.15

$$\Rightarrow a = 2\sqrt{2}$$

(ب)

$$\frac{a}{\sin \hat{A}} = \frac{b}{\sin \hat{B}} = \frac{c}{\sin \hat{C}} = 2\sqrt{2} \Rightarrow \sin \hat{A} = \frac{\sqrt{2}}{2} \Rightarrow \hat{A} = 45^\circ, \hat{C} = 45^\circ$$

.16

$$\frac{a}{\sin \hat{A}} = \frac{b}{\sin \hat{B}} = \frac{c}{\sin \hat{C}} = 2\sqrt{2} \Rightarrow \hat{A} = 45^\circ, \hat{C} = 45^\circ$$

.17

$$\frac{a}{\sin \hat{A}} = \frac{b}{\sin \hat{B}} = \frac{c}{\sin \hat{C}} = 2\sqrt{2} \Rightarrow \hat{A} = 45^\circ, \hat{C} = 45^\circ$$

.18

$$BC^2 = AC^2 + AB^2 - 2AB \cdot AC \cdot \cos \alpha = 2 + 8 - 2 \cdot \sqrt{2} \cdot \sqrt{5} \cdot \cos \alpha = 10 - 2\sqrt{10} \cos \alpha = 1 \Rightarrow \cos \alpha = \frac{1}{2\sqrt{10}} \quad -4$$

$$ED^2 = AD^2 + AE^2 - 2AD \cdot AE \cdot \cos \alpha = 1 + 4 - 2 \cdot 1 \cdot 2 \cdot \frac{1}{2\sqrt{10}} = 5 - \frac{2}{\sqrt{10}} = 5 - \frac{2\sqrt{10}}{10} = 5 - \frac{\sqrt{10}}{5} \quad -7$$

$$\cos \alpha = \frac{1}{2\sqrt{10}} \Rightarrow a^2 = 2 + 4 - 2 = 4 \Rightarrow a = 2 \quad -7 \quad (الف)$$

$$S = \frac{1}{2} ab \sin C = \frac{1}{2} \times 1 \times \sqrt{5} \times \frac{\sqrt{3}}{2} = \frac{\sqrt{15}}{4} \quad -8$$

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

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

$$\frac{a^2 + b^2 - c^2}{2ab} = \cos C \Rightarrow \frac{a^2 + b^2 - c^2}{2ab} = \cos C \Rightarrow \frac{a^2 + b^2 - c^2}{2ab} = \cos C \quad -9$$

$$\frac{a^2 + b^2 - c^2}{2ab} = \cos C \Rightarrow \frac{a^2 + b^2 - c^2}{2ab} = \cos C \Rightarrow \frac{a^2 + b^2 - c^2}{2ab} = \cos C \quad -10$$

$$a^2 = b^2 + c^2 - 2bc \cos A \Rightarrow \frac{a^2}{b^2 + c^2 - 2bc \cos A} = 1 \Rightarrow \frac{a^2}{b^2 + c^2 - 2bc \cos A} = 1 \Rightarrow \frac{a^2}{b^2 + c^2 - 2bc \cos A} = 1 \quad -11$$

$$\cos A = -\frac{1}{2} \quad -12$$

$$\cos A = -\frac{1}{2} \Rightarrow \cos A = -\frac{1}{2} \Rightarrow \cos A = -\frac{1}{2} \quad -13$$

$$\cos A = -\frac{1}{2} \Rightarrow \cos A = -\frac{1}{2} \Rightarrow \cos A = -\frac{1}{2} \quad -14$$

$$a^2 = b^2 + c^2 - 2bc \cos A = 2 + 4 - 2 \cdot 1 \cdot 2 \cdot (-\frac{1}{2}) = 2 + 4 + 2 = 8 \Rightarrow a = 2\sqrt{2} \quad -15$$

$$a = 2\sqrt{2} \quad -16$$

$$a = 2\sqrt{2} \quad -17$$

$$a = 2\sqrt{2} \quad -18$$