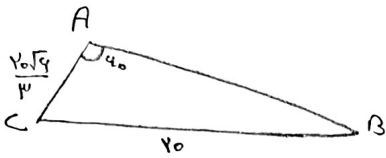


۱۹/۲۵ آفرین



$$\Rightarrow \frac{10}{\sqrt{10}} = \frac{10\sqrt{10}}{10 \sin B} \Rightarrow \sin B = \frac{10\sqrt{10} \times \sqrt{10}}{4 \times 10} = \frac{\sqrt{10}}{4} \Rightarrow \hat{B} = 40^\circ$$

$$\Rightarrow \hat{C} = 180 - 40 - 40 = 100^\circ$$

$$\frac{\sqrt{10}}{\sin 40^\circ} = \frac{AC}{\sin 40^\circ} \Rightarrow \frac{\sqrt{10}}{\frac{\sqrt{10}}{4}} = \frac{AC}{\frac{\sqrt{10}}{4}} \Rightarrow AC = \frac{\sqrt{10} \times \sqrt{10} \times 4}{\sqrt{10}} = 4\sqrt{10}$$

$$\Rightarrow \sin 40^\circ = \frac{\sqrt{10}}{4} \Rightarrow \frac{x}{AC} = \frac{\sqrt{10}}{4} \Rightarrow \frac{x}{4\sqrt{10}} = \frac{\sqrt{10}}{4} \Rightarrow x = 10$$

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

$$\Rightarrow (b^2 - 1) \frac{1}{\sin B} = \frac{c}{\sin C} \Rightarrow b^2 - 1 = b \Rightarrow b^2 - b - 1 = 0 \Rightarrow b = \frac{1 \pm \sqrt{5}}{2}$$

$b = 1 \rightarrow$ غیر قابل قبول

$$10^2 = 4^2 + 10^2 - 2(4)(10) \cos B \Rightarrow 100 = 16 + 100 - 80 \cos B$$

$$\Rightarrow -40 = -80 \cos B \Rightarrow \cos B = \frac{1}{2} \Rightarrow \sin B + \cos B = 1 \Rightarrow \sin B = \frac{1}{2}$$

$$\text{الف) } a = \sqrt{(4+10)^2 + 10^2 - 2(4)(10) \cos B} = \sqrt{100} = 10$$

$$\text{ب) } \Rightarrow a = 10 \Rightarrow \frac{10}{\sin 40^\circ} = \frac{b}{\sin B} \Rightarrow \sin B = \frac{10 \sin 40^\circ}{10} = \sin 40^\circ \Rightarrow \sin B = \sin 40^\circ$$

$$\Rightarrow \hat{B} = 40^\circ \text{ و } \hat{C} = 180 - 100 = 80^\circ$$

$$10 = 4 + 10 - 2(4)(10) \cos \alpha \Rightarrow \cos \alpha = \frac{1}{2}$$

مقدار بزرگتر

$$DE = \sqrt{10 + 10 - 2(10)(10) \cos \alpha} = \sqrt{10} \Rightarrow 10$$

$$\text{الف) } BC = \sqrt{\frac{4 \times 9 + 2 \times 9}{1 \times 9} - \frac{1 \times (1) \times (9)}{9}} = \sqrt{4 \times 9} = \boxed{V}$$

(V)

$$\text{ب) } S_{ABC} = \frac{1}{2} \times 1 \times \sqrt{3} \times \sin 40^\circ \Rightarrow \frac{1 \times \sqrt{3}}{2} = 1 \times \sqrt{3}$$

$$\frac{b^2 + c^2 + 2bc - a^2}{bc(\cos A + 1)} \xrightarrow{\text{تفقیل از}} \frac{b^2 + c^2 + 2bc - a^2 - 2bc \cos A - 2bc}{bc \cos A + bc}$$

$$\frac{a^2 - a^2 + 2bc - 2bc}{bc \cos A + bc} = \boxed{0}$$

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

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

(1, 2, 0)

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

$$b^2 + c^2 + bc = a^2 \Rightarrow \text{از این ضرب 2- از این}$$

$$\text{رفته } \cos A \text{ و } \cos A = -\frac{1}{2} \Rightarrow \hat{A} = 120^\circ$$

$$\frac{S}{\frac{1}{2}} = \frac{1}{2} (3 - \cos \theta) (1 + 3 \cos \theta) \frac{\sin 30^\circ}{\frac{1}{2}} \Rightarrow \lambda = \frac{(3 - x)(1 + 3x)}{3 + 9x - x - 3x^2} \Rightarrow 3x^2 - \lambda x + 0 = 0$$

$$\Rightarrow x = 1 \Rightarrow x = \frac{0}{3} \rightarrow \text{غیر قابل قبول}$$

$$\Rightarrow a = \sqrt{9 + 19 - \frac{1 \times (2) \times (4)}{2}} \Rightarrow \sqrt{20 - 4\sqrt{3}} \Rightarrow \boxed{2\sqrt{5 - \sqrt{3}}}$$

$$a^2 = 20 - 4\sqrt{3}$$

سوال 2، از ضوابط ←