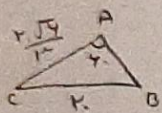


۲. آفرین

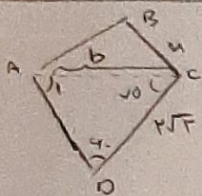


$$\hat{B}, \hat{C} = 12^\circ \Rightarrow \hat{A} = 180^\circ - 12^\circ = 168^\circ$$

$$\frac{a}{\sin A} = \frac{b}{\sin B} \Rightarrow \frac{1}{\sin 168^\circ} = \frac{1}{\sin 12^\circ} \Rightarrow \sin 168^\circ = \sin 12^\circ$$

$$\frac{\sqrt{3}}{4} = \frac{1}{4} \Rightarrow \sqrt{3} = 1 \Rightarrow \hat{B} = 40^\circ$$

$$\hat{C} = 12^\circ, \varepsilon\omega = \nu\omega$$



$$\hat{A} = 180^\circ - (\nu\omega + 4^\circ) = 176^\circ$$

$$\frac{b}{\sin B} = \frac{a}{\sin A} \Rightarrow \frac{b}{\sin 12^\circ} = \frac{1}{\sin 176^\circ} \Rightarrow b = 1$$

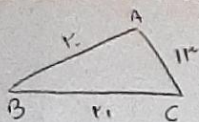
در مثل ABC، b و وتر بوده و

صلى روى زاویه ۴۰ است پس $\frac{\sqrt{3}}{4} b = 1 \Rightarrow b = \frac{4}{\sqrt{3}}$

$$\frac{c}{\sin C} = \frac{b}{\sin B} \Rightarrow \frac{c}{\sin 12^\circ} = \frac{1}{\sin 12^\circ} \Rightarrow c = 1$$

$$\frac{c}{\sin C} = \frac{b}{\sin B} \Rightarrow (b^2 - 1) \left(\frac{c}{b} \right) = c \Rightarrow \frac{b^2 - 1}{b} = 1 \Rightarrow b^2 - b - 1 = 0 \Rightarrow b = 2$$

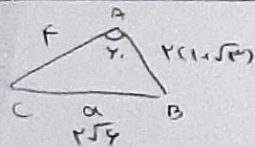
$$(b-1)(b+1) = 0 \Rightarrow b = 1 \text{ or } b = -1$$



$$b^2 = a^2 + c^2 - 2ac \cos \hat{B} \Rightarrow 149 = 1 + 1 - 2(1)(1) \cos \hat{B} \Rightarrow \cos \hat{B} = \frac{147}{2} = 73.5$$

$$\Rightarrow \cos \hat{B} = \frac{147}{2} = 73.5 \Rightarrow \sin \hat{B} = \frac{1}{9}$$

در مثل مثلث طلایی با اضلاع ۱، ۱، ۱



$$a^2 = b^2 + c^2 - 2bc \cos \hat{A} \Rightarrow 14 = 1 + 1 - 2(1)(1) \cos \hat{A} \Rightarrow \cos \hat{A} = \frac{12}{2} = 6$$

$$14 = 1 + 1 - 2(1)(1) \cos \hat{A} \Rightarrow 12 = -2 \cos \hat{A} \Rightarrow \cos \hat{A} = -6$$

$$\frac{a}{\sin A} = \frac{b}{\sin B} \Rightarrow \frac{1}{\sin 4^\circ} = \frac{1}{\sin 12^\circ} \Rightarrow \sin 4^\circ = \sin 12^\circ$$

$$\hat{C} = 180^\circ - (\varepsilon\omega + 4^\circ) = \nu\omega$$

$$AB^2 = BC^2 + AC^2 - 2(BC)(AC) \cos \hat{A} \Rightarrow 1 = 1 + 1 - 2(1)(1) \cos \hat{A} \Rightarrow \cos \hat{A} = \frac{1}{2}$$

$$ADE = DE^2 = AD^2 + AE^2 - 2(AD)(AE) \cos \hat{A} \Rightarrow DE^2 = 1 + 1 - 2(1)(1) \cos \hat{A} \Rightarrow DE = 1$$

$$BC^2 = AC^2 + AB^2 - 2(AC)(AB) \cos \hat{A} \Rightarrow BC^2 = 1 + 1 - 2(1)(1) \cos \hat{A} = 1 \Rightarrow BC = 1$$

$$S_{ABC} = \frac{1}{2} \times AC \times AB \times \sin \hat{A} \Rightarrow \frac{1}{2} \times 1 \times 1 \times \sin 4^\circ = \frac{1}{2} \times \sqrt{3} \times \sin 12^\circ$$

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

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

$$a^2 + b^2 - c^2 = a^2 + a^2 b - a^2 c \Rightarrow b^2 - c^2 = a^2 b - a^2 c$$

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

$$1 + 1 + 1 = 1 \Rightarrow \cos \hat{A} = -1 \Rightarrow \hat{A} = 180^\circ$$

در زاویه دیگر به جز ۱۲۰ درجه تریکوتی بودن از ۱۸۰ غیر قابل قبول است.

$$S_{ABC} = \frac{1}{2} AB \times AC \times \sin \hat{A} \Rightarrow \frac{1}{2} (1 \cos \theta)(1 + 1 \cos \theta) \times \frac{1}{2} = 1 \Rightarrow 1 + \cos \theta - \cos \theta - \cos^2 \theta = 1$$

$$1 \cos^2 \theta - 1 \cos \theta + 1 = 0 \Rightarrow \cos \theta = 1 \Rightarrow \theta = 0^\circ$$

$$a^2 = b^2 + c^2 - 2bc \cos \hat{A} \Rightarrow 14 = 1 + 1 - 2(1)(1) \cos \hat{A} \Rightarrow \cos \hat{A} = \frac{12}{2} = 6$$

