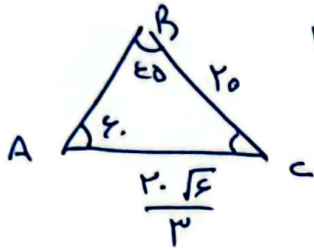


کامیار لفری پاسفان لفری کلیل دوار لفری لفری



$$110 - 120 = 40$$

$$\frac{10}{\sin 40} = \frac{12}{\sin \gamma}$$

$$\frac{10}{12} = \frac{\sin 40}{\sin \gamma} \Rightarrow \frac{\sin 40}{\sin \gamma} = \frac{10}{12}$$

$$110 \sin \gamma = 12 \sin 40 \Rightarrow \sin \gamma = \frac{12 \sin 40}{110} = \sin \gamma = \frac{12 \sin 40}{110} \Rightarrow \sin \gamma = \frac{12 \sin 40}{110} = \frac{12 \sin 40}{110}$$

$$\Rightarrow \gamma = 40 \Rightarrow 40 + 40 = 80$$

$$110 - 80 = 30^\circ = \gamma$$

$$110 + 40 = 150$$

$$110 - 130 = 40$$

$$\frac{10}{\sin 40} = \frac{AC}{\sin \epsilon} \Rightarrow \frac{10}{12} = \frac{AC}{12} = \epsilon = \frac{10}{12}$$

$$\epsilon \sqrt{12} = 10 \Rightarrow AC = \sqrt{12}$$

$$\frac{10}{\sin 40} = \frac{2}{\sin \epsilon} \Rightarrow \frac{10}{1} = \frac{2}{\sin \epsilon} = \frac{2}{\sin \epsilon}$$

$$10 \sqrt{12} = \frac{20}{\sqrt{12}} = 4 = 20 \Rightarrow (4=20) \checkmark$$

$$\frac{C}{\sin \epsilon} = \frac{B}{\sin \gamma} \Rightarrow \frac{C}{B} = \frac{\sin \epsilon}{\sin \gamma}$$

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

$$\Rightarrow b = 2 \checkmark$$

$$b = -1 \quad 0 \quad 1$$

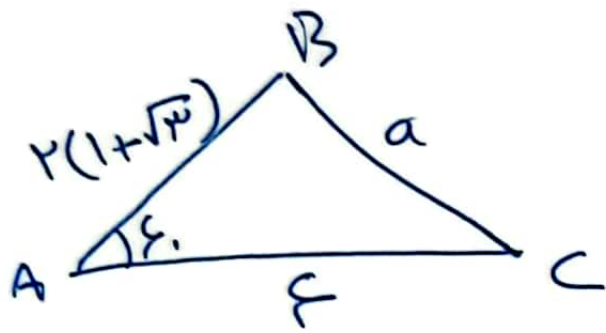
$$(b-1)(b+1) = 0$$

$$\Rightarrow (13)^2 = (11)^2 + (10)^2 - 2(11)(10) \cos B$$

$$\Rightarrow 169 = 121 + 100 - 220 \cos B$$

$$169 \cos B = 161 - 169 \quad \cos B = \frac{4\sqrt{12}}{169} \quad (9/11)$$

$$\Rightarrow \cos^2 B + \sin^2 B = 1 \Rightarrow \frac{4\sqrt{12}}{169} + \sin^2 B = 1 \Rightarrow \sin^2 B = \frac{165}{169} \Rightarrow \sin B = \frac{12}{13}$$



$$a^2 = 16 + \epsilon(1+\sqrt{3})^2 - 2(\epsilon)(1+\sqrt{3})\left(\frac{1}{\epsilon}\right) \quad (1)$$

$$a^2 = 16 + \underbrace{16}_{\wedge} + \cancel{A\sqrt{3}} - \cancel{A\sqrt{3}} = 2\epsilon = a^2$$

$$a = \sqrt{2\epsilon} = \sqrt{2}\sqrt{\epsilon} \quad (\text{الت})$$

$$\frac{\frac{\sqrt{2\epsilon}}{\sqrt{2}}}{\frac{\epsilon}{\sin B}} = \frac{\epsilon\sqrt{2}}{\sqrt{2}} = \frac{1}{\sqrt{2}} = \frac{\epsilon}{\sin B} \Rightarrow \sin B = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2} \Rightarrow B = 45^\circ$$

$$60 + 45 = 105 \Rightarrow C = 75^\circ \quad \checkmark$$

$$\epsilon = 16 + \epsilon + -2(\epsilon)(1)\cos\alpha \Rightarrow \epsilon = 0 + -\epsilon\cos\alpha$$

$$(\epsilon\cos\alpha = 1)(\cos\alpha = \frac{1}{\epsilon}) \quad \checkmark \quad (2)$$

$$\text{مطلوب} \Rightarrow DE^2 = \left(\frac{\epsilon}{1+\epsilon}\right)^2 + \left(\frac{\epsilon}{1+\epsilon}\right)^2 - 2\left(\frac{\epsilon}{1+\epsilon}\right)\left(\frac{\epsilon}{1+\epsilon}\right)\cos\alpha$$

$$16 + 16\frac{\epsilon}{1+\epsilon} - 16\frac{\epsilon}{1+\epsilon} = \epsilon_0 \Rightarrow DE = \sqrt{\epsilon_0} \Rightarrow DE = \sqrt{16} \quad \checkmark$$

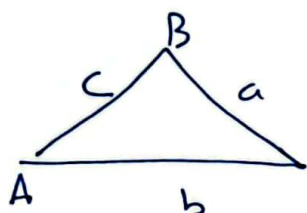
DE مطلوب

$$BC^2 = r^2 + r^2 - 2(r)(r)(-\cos \frac{\pi}{2})$$

(✓)

$$\underline{BC^2 = r^2} \Rightarrow \underline{BC = r} \quad \checkmark$$

$$\frac{1}{r} ab \sin A = S_{ABC} \Rightarrow \frac{1}{r} \times \frac{r}{2} \times A \times \frac{r}{2} = \frac{1}{2} \times \frac{r}{2} = \frac{1}{4} \quad \checkmark$$



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

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

$$\frac{+2bc(\cos A + 1)}{bc(\cos A + 1)} = 2 \quad \checkmark$$

$$a^2 = \frac{a^2 + b^2 - c^2}{a+b-c} \quad \text{در طرف بالا} \quad a^2(a+b-c) = \frac{a^2 + b^2 - c^2}{a+b-c} \times a+b-c$$

(9)

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

$$(b-c)(b^2 + bc + c^2) = a^2(b-c) \quad \begin{matrix} \text{نفرین میگیریم} \\ \text{چون کتبه با اضلاع نامساوی} \end{matrix}$$

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

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

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

$$\frac{1}{r} \times (r - \cos \alpha) \times (1 + r \cos \alpha) \times 2 \times \frac{r}{2} = r$$

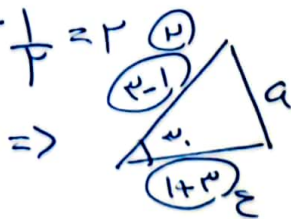
$$\frac{1}{r} \times (-r \cos^2 \alpha + 1 \cos \alpha + r) = r$$

$$\Rightarrow -r \cos^2 \alpha + 1 \cos \alpha + r = r$$

$$\cos^2 \alpha + 1 \cos \alpha + 0 = 0$$

$$(\cos \alpha + 1)(\cos \alpha + 0) = 0$$

$$\cos \alpha = -\frac{r}{r} = -1 \quad \cos = -\frac{r}{r} = -1$$



$$\Rightarrow a^2 = r^2 + r^2 - 2(r)(r) \cos \alpha$$

$$\underline{r^2 - 2r^2 = a^2} \quad \checkmark$$

(10)