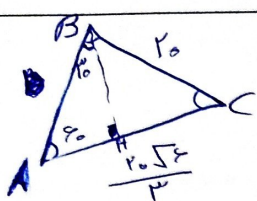


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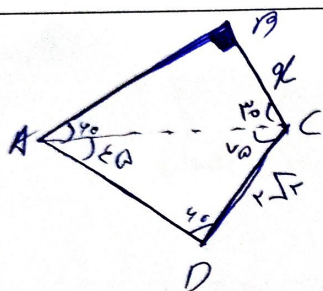
نام و نام خانوادگی پاسخنامه تشریحی تکلیف شماره 13 کلاس دوازدهم B



$$B + C = 120^\circ \rightarrow A = 60^\circ$$

$$\sin A = \frac{BC}{AB} = \frac{10}{10} = 1 \Rightarrow A = 90^\circ \rightarrow C = 90^\circ$$

$$\frac{BC}{\sin A} = \frac{AC}{\sin B} \rightarrow \frac{10 \times 1}{\sqrt{3}} = \frac{10 \sqrt{3}}{1 \times \sin B} \rightarrow \sin B = \frac{\sqrt{3}}{1} \rightarrow B = 60^\circ \rightarrow C = 60^\circ$$



$$\frac{\sin 60^\circ}{DC} = \frac{\sin 60^\circ}{AC} \rightarrow \frac{\sqrt{3}}{1 \times 10\sqrt{3}} = \frac{\sqrt{3}}{1 \times AC}$$

$$\rightarrow AC = 10\sqrt{3}$$

$$\cos 60^\circ = \frac{10}{AC} \rightarrow \frac{\sqrt{3}}{1} = \frac{10}{10\sqrt{3}}$$

$$\rightarrow 10 = 10$$

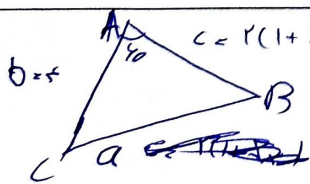
$$\frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\left\{ \frac{(b^2 - r)(\sin 60^\circ)}{\sin 60^\circ} = c \rightarrow \frac{b^2 - r}{\sin 60^\circ} = \frac{c}{\sin 60^\circ} \right.$$

$$\rightarrow b = b^2 - r \rightarrow b^2 - b - r = 0 \rightarrow b = 1 \text{ و } b = 2$$

$$AC = \sqrt{AB^2 + BC^2 - 2 \cos B \times AB \times BC} \Rightarrow 100 = 100 + 100 - 100 \cos B$$

$$\rightarrow 100 \cos B = 100 \rightarrow \cos B = 1 \rightarrow B = 0^\circ \rightarrow \sin B = \frac{10}{10}$$



$$a = \sqrt{b^2 + c^2 - 2bc \cos 60^\circ} = \sqrt{10^2 + 10^2 - 2 \times 10 \times 10 \times \frac{1}{2}} = \sqrt{100 + 100 - 100} = \sqrt{100} = 10$$

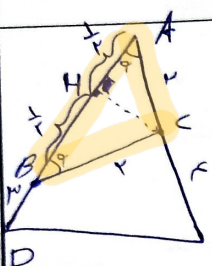
$$\frac{\sin B}{b} = \frac{\sin A}{a} \rightarrow \frac{\sin 60^\circ}{10} = \frac{\sin 60^\circ}{10} \rightarrow \sin B = \frac{\sqrt{3}}{2} \rightarrow B = 60^\circ$$

$$\rightarrow C = 60^\circ$$

$$BC = \sqrt{AB^2 + AC^2 - 2 \times AB \times AC \times \cos 90^\circ} = \sqrt{9 + 16 - 2 \times 3 \times 4 \times \frac{1}{2}} \quad (\text{لوقه})$$

$$\sqrt{5} \rightarrow BC = \sqrt{5}$$

$$S = \frac{1}{2} AB \times AC \times \sin 90^\circ = \frac{3 \times 4 \times \frac{1}{2}}{2 \times 2} = 1.5 \quad (\text{لوقه})$$



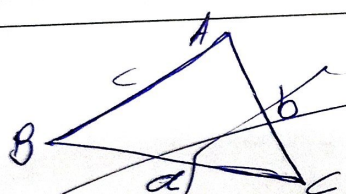
$$\vec{c} = \frac{1}{c} + \vec{CH} \rightarrow \vec{CH} = \frac{1}{c} \vec{c} \rightarrow CH = \frac{\sqrt{10}}{2}$$

$$\rightarrow \sin \alpha = \frac{\sqrt{10}}{4}$$

$$ABC \text{ مثلث} \rightarrow 3^2 + 4^2 - 2(3)(4)(\cos A) = 5^2 \rightarrow 9 + 16 - 24 \cos A = 25 \rightarrow \cos A = -\frac{1}{2}$$

$$ADE \text{ مثلث} \rightarrow 4^2 + 3^2 - 2(4)(3)(\frac{1}{2}) = DE^2 \rightarrow 16 + 9 - 12 = DE^2 \rightarrow DE = \sqrt{3}$$

$$DE^2 = 3 \rightarrow DE = \sqrt{3}$$



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

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

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

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

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

$$\rightarrow -2 \cos A = 1 \rightarrow \cos A = -\frac{1}{2} \rightarrow A = 120^\circ$$

$$\frac{1}{r} \times (1 - \cos \theta)(1 + 3 \cos \theta) \times \frac{1}{r} = 2 \rightarrow$$

$$1 = 3 + 9 \cos \theta - \cos \theta - 3 \cos \theta \rightarrow 3 \cos^2 \theta - 1 \cos \theta + 1 = 0$$

$$\rightarrow \cos \theta = 1 \rightarrow AB = r \rightarrow AC = r$$

$$\rightarrow \cos \theta = \frac{a}{r} \text{ ق.ق.ع}$$

$$a^2 = AB^2 + AC^2 - 2 \times AB \times AC \times \cos 90^\circ$$

$$\rightarrow a^2 = 9 + 16 - 2 \times 3 \times 4 \times \frac{1}{2} = 10 \rightarrow a = \sqrt{10}$$

$$b^r + c^r + rbc - a^r$$

$$bc \left(\frac{a^r - b^r - c^r - rbc}{-rbc} \right)$$

$$= \frac{+r(a^r - b^r - c^r - rbc)}{a^r - b^r - c^r - rbc} = r$$