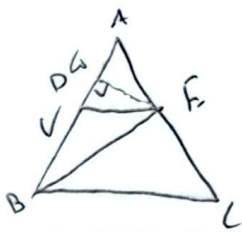


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$$S_{ADE} = 4x \quad S_{BDE} = 4x \quad ADE \sim ABC \Rightarrow \frac{S_{ABC}}{S_{ADE}} = \left(\frac{14}{4}\right)^2$$



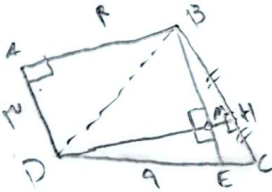
$$S_{ABC} = \frac{14^2}{4} x$$

$$S_{BCE} = S_{ABC} - S_{ABE} = \frac{14^2}{4} x - 4x = \frac{14^2}{4} x$$

$$\frac{S_{BCE}}{S_{BDE}} = \frac{\frac{14^2}{4} x}{4x} = \frac{14}{4} = 3.5 \quad \checkmark$$

$$M_1 = M_2 = 90^\circ \Rightarrow BDM \cong DME \rightarrow BM = ME$$

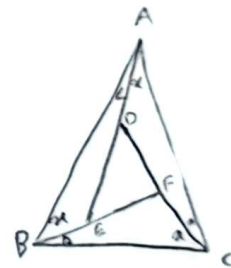
$$BH \perp DC \Rightarrow BMH \sim BEC \Rightarrow \frac{BM}{BE} = \frac{MH}{EC} \Rightarrow MH = 2 \quad \checkmark$$



$$\begin{aligned} \hat{D} &= a + d = \hat{C} \\ \hat{F} &= a + b = \hat{B} \\ \hat{E} &= a + c = \hat{A} \end{aligned}$$

$$\Rightarrow ABC \sim DEF$$

$$\frac{AB}{EF} = \frac{BC}{DF} \Rightarrow AB = \frac{1 \times 3}{1.5} = 2 \quad \checkmark$$



$$\hat{C}_1 = \hat{M}_1 = \alpha$$

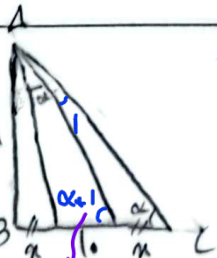
$$\cos \alpha = \frac{4}{3\sqrt{5}} = \frac{4}{FM} \rightarrow FM = \frac{3\sqrt{5}}{2}$$

$$DC \parallel MB \Rightarrow DCE \sim MEB$$

$$\frac{DE}{MB} = \frac{CE}{ME} \Rightarrow \frac{1}{3} CE = ME = \alpha$$

$$\rightarrow 3\alpha = 3\sqrt{5} \Rightarrow \alpha = \sqrt{5}$$

$$S_{FME} = \frac{3\sqrt{5}}{2} \times \frac{\sqrt{5}}{2} = \frac{15}{2} = 7.5 \quad \checkmark$$



$$\frac{14}{10+20}$$

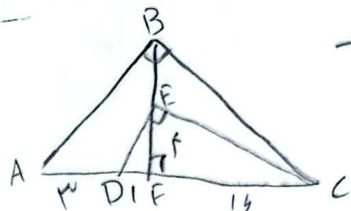
ریاضی اربعه ۱۴۰۳ داخل

$$CAE \approx AED \rightarrow \frac{AE}{ED} = \frac{EC}{AE} \rightarrow \frac{\sqrt{5}+1}{1} = \frac{1+\sqrt{5}}{\sqrt{5}+1}$$

$$\rightarrow \begin{cases} n=3 \\ n=5 \end{cases}$$

زاویه خارجی

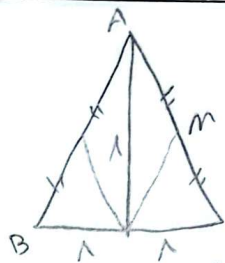
$$EF^2 = DF \times FC \Rightarrow FC = 14 \text{ cm} \quad BC^2 = FC \times AC$$



$$\rightarrow BC = \sqrt{14 \times 2} = 1\sqrt{10} \quad \checkmark$$

(2)

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$$AC = 1\sqrt{2}$$

$$MH = \frac{AC}{2}$$

$$MH = 1\sqrt{2}$$

$$a^2 + a^2 = (14)^2 \rightarrow a = 1\sqrt{2}$$

$$a = 1\sqrt{2}$$

$$n^2 = (1\sqrt{2})^2 + (1\sqrt{2})^2 \rightarrow n = 2\sqrt{2}$$

$$n^2 = (1\sqrt{2})^2 + (1\sqrt{2})^2 \rightarrow n = 2\sqrt{2}$$

0

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$$E_1 = E_2 = 90^\circ \Rightarrow OEC \cong OBE \rightarrow EC = BE \quad \checkmark$$

$$BC = 2\sqrt{10} \quad \checkmark \quad \tan \angle BCO = \frac{OE}{EC} = \frac{1}{2} \Rightarrow OE = \frac{\sqrt{10}}{2}$$

$$\omega = \frac{\omega}{r} \times AE \Rightarrow AE = 2\sqrt{10} \quad \checkmark$$

$$S_{ABE} = \frac{1}{2} AE \times BE = \frac{1}{2} \times 2\sqrt{10} \times \sqrt{10} = 10$$

(2)

1

$$\sin \alpha = \frac{9}{2\sqrt{10}} = \frac{9}{2\sqrt{10}} \quad DC = r \sin \alpha = \frac{9}{\sqrt{10}}$$

$$EC = \frac{DE}{\frac{9}{\sqrt{10}}} \times \cos \alpha = \frac{9}{10} \Rightarrow BE = 9 - \frac{9}{10} = 8.1 \quad \checkmark$$

(2)

9

$$AC = \sqrt{12^2 + 14^2} = 10$$

$$\triangle ABC \sim \triangle AHB \sim \triangle ADE$$

$$\frac{AC}{AB} = \frac{AH}{AB} \Rightarrow AH = 12.1 \Rightarrow AE = 12.1$$

$$\frac{DE}{AE} = \frac{BC}{AC} \Rightarrow DE = 12.1 \quad \checkmark$$

(2)

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