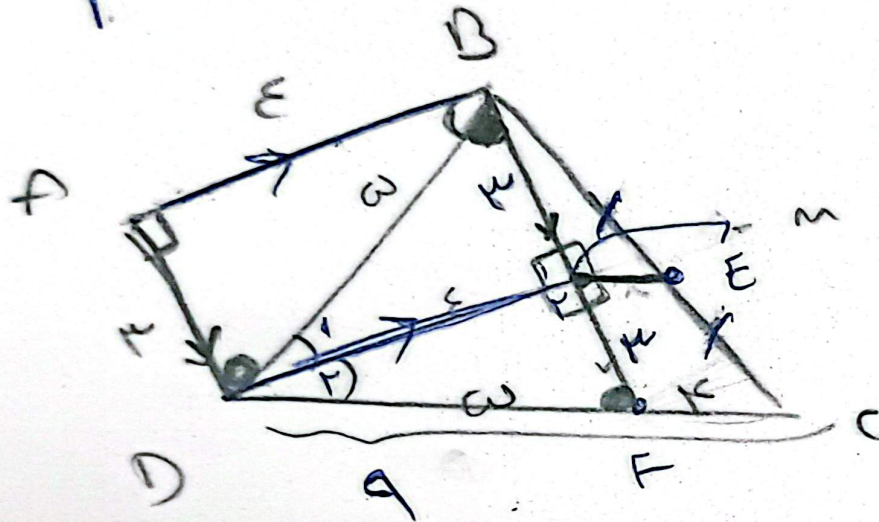


نیسا غورس
 $\rightarrow BD = \sqrt{9+14}$



$ABMD \rightarrow$ متشکل $\rightarrow BM = 2$

$\hat{D}_1, \hat{D}_2$ (نیسا DM)

$\hat{M}_1 = \hat{M}_2 = 90^\circ$

همین
 $\rightarrow DBM \equiv DMF$

$DM = DM$

$DF = DB = \omega$ ← DBF متساوی الساقین
 $FC = 9 - \omega = 4$

$BM = MF$

$ME \parallel CD$ ← ME و CD موازی است
 $\left\{ \begin{array}{l} \text{و } BF \text{ بر } ME \text{ عمود است} \\ \text{و } BF \text{ بر } CD \text{ عمود است} \end{array} \right.$

$\frac{BM}{BF} = \frac{ME}{FC}$

$\frac{BM}{BF} = \frac{ME}{FC}$

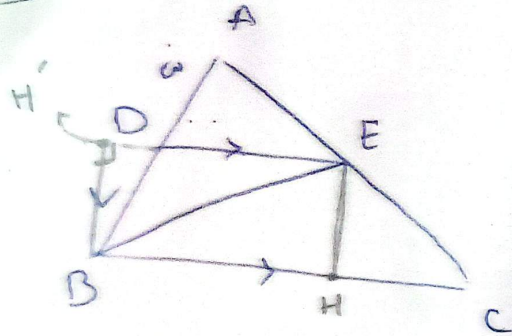
$\rightarrow \frac{2}{4} = \frac{ME}{4}$

$ME = 2$

مسئله: یک مثلث را در نظر بگیرید

تعلیف: ۲۲

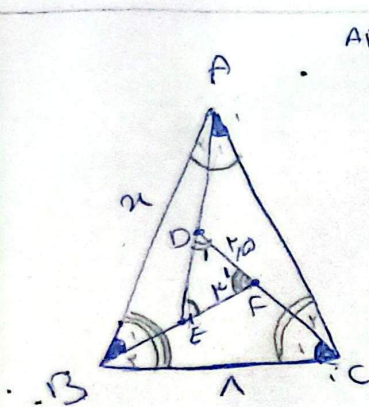
نام دانش‌آموز: آریس عظیمی



$$DE \parallel BC \rightarrow BH' = EH$$

$$\xrightarrow{QW} \frac{AD}{AB} = \frac{DE}{BC} \rightarrow \frac{a}{1/2} = \frac{DE}{BC}$$

$$\frac{S_{\triangle BCE}}{S_{\triangle BDE}} = \frac{EH \times BC}{BH \times DE} = \frac{BC}{DE} = \frac{1/2}{a} = \text{خطی} \quad \left(\frac{1}{2} \right)$$



$$\vec{ABE} \Rightarrow \vec{E_1} = \vec{B_1} + \vec{A_1} = \vec{A}$$

$$\rightarrow \vec{D_1} = \vec{A_1} + \vec{C_1} = \vec{C}$$

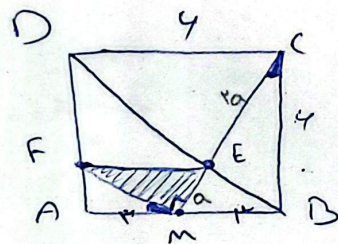
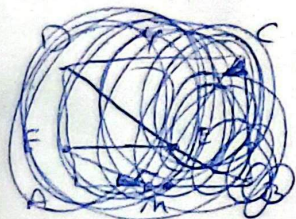
$$\rightarrow \vec{E_1} = \vec{D_1} + \vec{B_1} = \vec{B}$$

...

$$\triangle DEF \sim \triangle ABC$$

$$\frac{EF}{AB} = \frac{DE}{AC} = \frac{DF}{BC}$$

$$\frac{\kappa}{\lambda} = \frac{\sqrt{2}}{\lambda} \Rightarrow \boxed{\kappa = \frac{1}{\sqrt{2}}}$$



$$DC \parallel MB \Rightarrow \triangle DCE \sim \triangle MEB \Rightarrow \frac{DC}{MB} = \frac{EC}{ME} = \frac{1}{2}$$

$$\text{ضلعوں: } MC = \sqrt{4^2 + 4^2} = 4\sqrt{2}$$

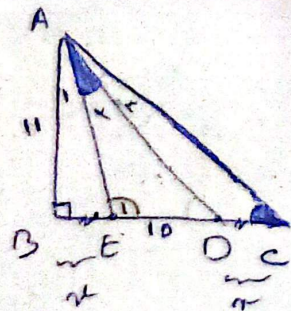
$$\left. \begin{matrix} ME = a \\ EC = 2a \end{matrix} \right\} MC = 3a$$

$$\left. \begin{matrix} \hat{A} = \hat{B} = 45^\circ \\ \hat{M}_1 = \hat{C}_1 \end{matrix} \right\} \Rightarrow \triangle AFM \sim \triangle MCB$$

$$\frac{FA}{MB} = \frac{FM}{MC} = \frac{AM}{BC} \rightarrow \frac{FM}{4\sqrt{2}} = \frac{1}{4} = \frac{1}{4}$$

$$\text{ضلعوں: } MC = 3a = 4\sqrt{2} \rightarrow a = \frac{4\sqrt{2}}{3} = ME, FM = \frac{4}{3}\sqrt{2}$$

$$S_{FME} = \frac{FM \cdot ME}{2} = \frac{\frac{4}{3}\sqrt{2} \times \frac{4\sqrt{2}}{3}}{2} = \frac{16}{9}$$



$$\left. \begin{matrix} \hat{E}_1 = \hat{E}_1 \\ \hat{A}_1 = \hat{C}_1 \end{matrix} \right\} \Rightarrow$$

$$\triangle AED \sim \triangle AEC \rightarrow \frac{AD}{AC} = \frac{ED}{AE} = \frac{AE}{EC}$$

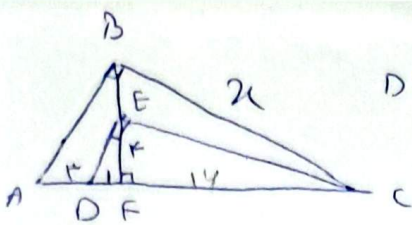
$$\frac{10}{AE} = \frac{AE}{15 + x}$$

$$AE^2 = 10 \cdot 15 + x$$

$$\text{ضلعوں: } AE^2 = AB^2 + BE^2 = 10^2 + x^2$$

$$\left. \begin{matrix} 10 + 15x = 10^2 + x^2 \\ x^2 - 15x + 10 = 0 \end{matrix} \right\} \Rightarrow \begin{matrix} x = 10 \\ x = 2 \end{matrix}$$

...



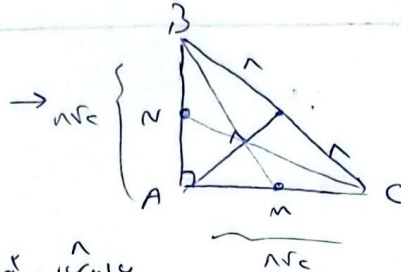
$$\triangle DEC \sim \triangle FEC \rightarrow EF^2 = DF \times FC$$

$$14 = 1 \times FC \rightarrow FC = 14$$

$$\triangle ABC \sim \triangle FBC \rightarrow BC^2 = FC \times AC \rightarrow BC^2 = 14 \times 20$$

$$BC = \sqrt{280} = 14\sqrt{2}$$

میتوانیم از این روش استفاده کنیم
برای یافتن آن ضلع است



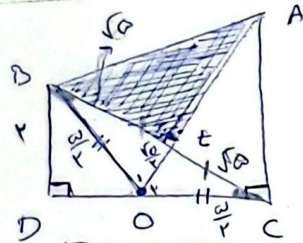
BM, CN = ?

$$\triangle ABC \sim \triangle MNC \rightarrow AB = AC = a \rightarrow a^2 = 14 \times 14$$

$$a = \sqrt{196} = 14 \rightarrow AM = MC = DN = AN = \sqrt{14}$$

$$\triangle ADM \rightarrow BM^2 = AB^2 + AM^2 \rightarrow BM^2 = 14^2 + 14 = 194 \rightarrow BM = \sqrt{194}$$

$$\triangle ACN \rightarrow CN^2 = AN^2 + AC^2 \rightarrow CN^2 = 14^2 + 14 = 194 \rightarrow CN = \sqrt{194}$$



$$\rightarrow BC = \sqrt{14^2 + 14} = 14\sqrt{2}$$

$$\rightarrow \hat{B}_1 = \hat{C}_1, \hat{E}_1 = \hat{E}_2 = 90^\circ \rightarrow \triangle BOE \cong \triangle OEC \rightarrow BE = EC = \sqrt{a}$$

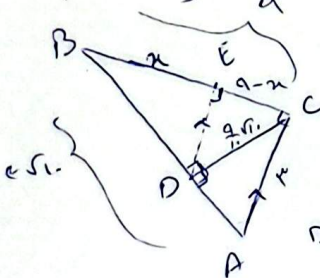
$$\rightarrow BO = OC = x \rightarrow DO = E - x \Rightarrow BD^2 = (14)^2 + (E - x)^2 = x^2 \rightarrow E + 14 + x^2 - 14x = x^2$$

$$14x = 196 \rightarrow x = \frac{14}{1}$$

SABE:

$$\frac{14 \times \sqrt{a}}{1} = \frac{a}{1} \rightarrow BOA \sim \triangle BEA \rightarrow BE^2 = OE \times EA$$

$$EA = a \div \frac{\sqrt{a}}{1} = \sqrt{a} = EA \rightarrow OE = \frac{a}{1} = \frac{14}{1}$$



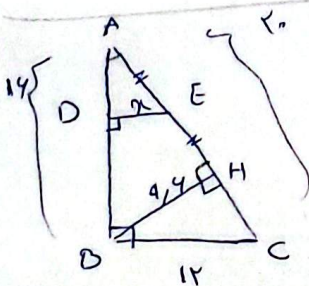
$$AB = \sqrt{14^2 + 14} = 14\sqrt{2}$$

$$DC = \frac{AC \times BC}{AB} = \frac{14 \times 14}{14\sqrt{2}} = \frac{14}{\sqrt{2}}$$

$$\triangle BDC \sim \triangle DEC \rightarrow DC^2 = EC \times BC$$

$$\frac{14}{1} = (14 - x) \times 14 \rightarrow 14 - 14x = 1 \rightarrow 14x = 13 \rightarrow x = \frac{13}{14}$$

$$x = \frac{13}{14}$$



$$AC = 14$$

$$BH = \frac{14 \times 14}{14} = 14$$

$$\triangle ABC \sim \triangle AHC \rightarrow AB^2 = AH \times AC$$

$$AH = \frac{14 \times 14}{14} = 14$$

$$\rightarrow AE = EH = \frac{14}{2}$$

$$\hat{A}, \hat{A} \rightarrow \triangle ADE \sim \triangle ABH \rightarrow \frac{DE}{BH} = \frac{AE}{AB} = \frac{AD}{AH} \rightarrow \frac{DE}{14} = \frac{14}{14} \rightarrow DE = 14$$