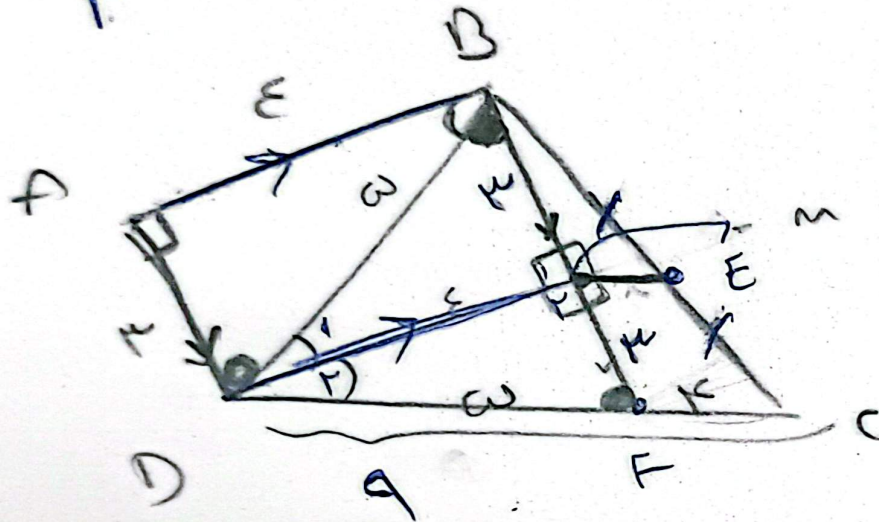


نیسا غورس
 $\rightarrow BD = \sqrt{9+14}$



$ABMD \rightarrow$ متثل $\rightarrow BM = 2$

$\hat{D}_1, \hat{D}_2$ (نیسا DM)

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

همس $\rightarrow DBM \equiv DMF$

$DM = DM$

$DF = DB = a \leftarrow$ مساواتیں
 $FC = 9 - a = 4$

$BM = MF$

$ME \parallel CD \leftarrow$ عکس عکس
 $\left\{ \begin{array}{l} \text{مساوات } BF \text{ است} \\ \text{مساوات } BE \text{ است} \end{array} \right.$

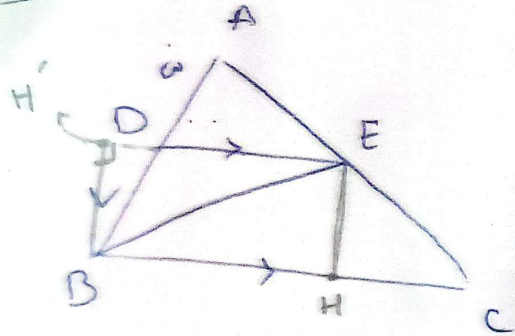
$\frac{BM}{BF} = \frac{ME}{FC}$

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

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

$ME = 2$

مسئله: یک مثلث را در نظر بگیرید



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

$$\xrightarrow{QW} \frac{AD}{AB} = \frac{DE}{BC} \rightarrow \frac{a}{12} = \frac{DE}{BC}$$

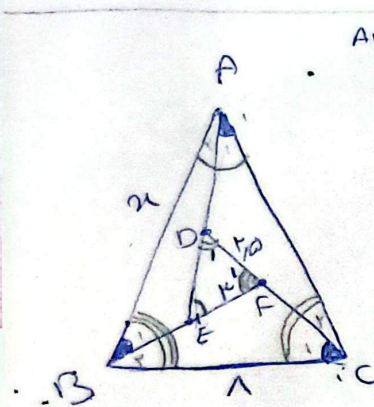
$$\frac{S_{\triangle BCE}}{S_{\triangle BDE}} = \frac{EH \times BC}{BH \times DE} = \frac{BC}{DE} = \frac{12}{a} = \text{پاسخ}$$

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تعلیف: ۲۲

نام دانش‌آموز: آریس عظیمی

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

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

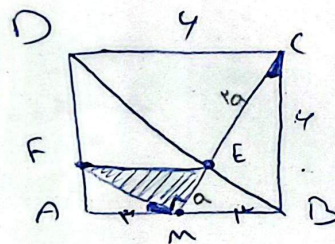
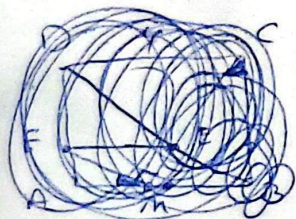
$$\rightarrow \vec{E_1} = \vec{D_1} + \vec{B_1} = \vec{B}$$

...

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

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

$$\frac{\kappa}{\alpha} = \frac{\sqrt{3}}{1} \Rightarrow \boxed{\kappa = 9/4}$$



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

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

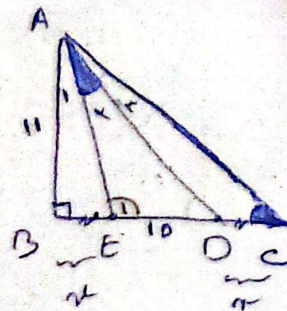
$$\left. \begin{array}{l} ME = a \\ EC = 2a \end{array} \right\} MC = 3a$$

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

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

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

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



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

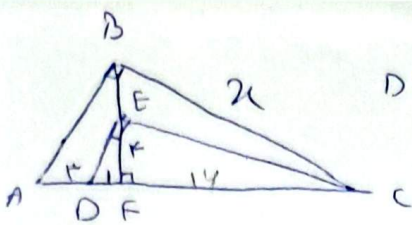
$$\triangle AED \sim \triangle AEC \rightarrow \frac{AD}{AC} = \frac{ED}{AE} = \frac{AE}{EC}$$

$$\frac{10}{AE} = \frac{AE}{15+2}$$

$$AE^2 = 10 \times 17 = 170$$

$$\text{ضلعوں: } \vec{AE^2} = \vec{AB^2} + \vec{BE^2} = 171 + 1^2 = 172$$

$$\left. \begin{array}{l} 1 + 12 = 13 + 1 \\ 1^2 - 1 \times 12 + 12 = 0 \\ (12-1)(12-1) \end{array} \right\} \Rightarrow \boxed{12 = 12, 1}$$



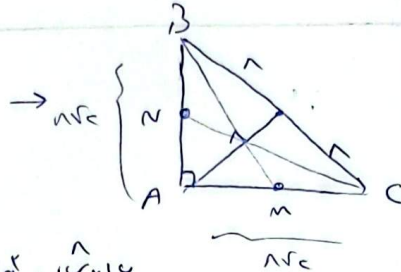
$\triangle DEC \sim \triangle EFC \rightarrow EF^2 = DF \times FC$

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

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

$BC = \sqrt{280} = 14\sqrt{5}$

میتوانیم از آنجا که $BE \perp AC$ و $EF \perp AC$ پس $BE \parallel EF$ و چون E روی BC است پس $BE = EF$ و BF میانه است.



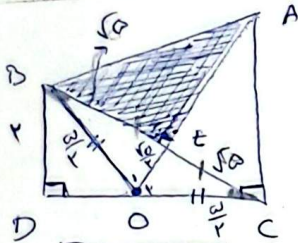
$BM, CN = ?$

$\triangle ABC \sim \triangle BCF \rightarrow AB = AC = \alpha \rightarrow \alpha^2 = 14 \times 20$

$\alpha = \sqrt{280} = 14\sqrt{5} \rightarrow AM = MC = DN = AN = 7\sqrt{5}$

$\triangle ABM \rightarrow BM^2 = AB^2 + AM^2 \rightarrow BM^2 = 14^2 + 49 = 245 \rightarrow BM = 7\sqrt{5}$

$\triangle ACN \rightarrow CN^2 = AN^2 + AC^2 \rightarrow CN^2 = 49 + 280 = 329 \rightarrow CN = 7\sqrt{5}$



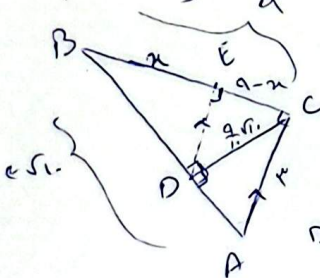
$BC = \sqrt{3^2 + 14^2} = 14\sqrt{5}$

$\hat{B}_1 = \hat{C}_1, \hat{E}_1 = \hat{E}_2 = 90^\circ, BO = OC \rightarrow \triangle BOE \cong \triangle OEC \rightarrow BE = EC = \sqrt{5}$

$BO = OC = x, DO = 1 - x \Rightarrow BD^2 = (1-x)^2 + (\sqrt{5})^2 = x^2 \rightarrow 1 - 2x + x^2 + 5 = x^2 \rightarrow 1 - 2x = -4 \rightarrow x = 5/2$

$S_{ABE} =$

$\frac{14 \times \sqrt{5}}{2} = \frac{1}{2} \times BO \times AC \rightarrow BO \times 20 = 14 \times \sqrt{5} \rightarrow BO = \frac{7\sqrt{5}}{5}$



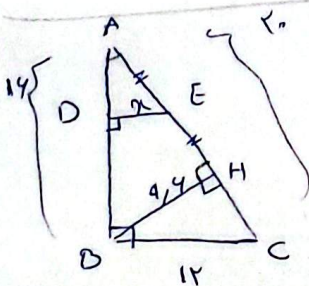
$AB = \sqrt{11^2 + 9} = 10\sqrt{10}$

$DC = \frac{AC \times BC}{AB} = \frac{10 \times 9}{10\sqrt{10}} = \frac{9}{\sqrt{10}}$

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

$\frac{1}{10} = (9-x) \times 9 \rightarrow 11 - 9x = 1/10 \rightarrow 9x = 109/10 \rightarrow x = 12/11$

$x = 12/11$



$AC = 20$

$BH = \frac{14 \times 14}{20} = 9.8$

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

$AH = \frac{14 \times 14}{20} = 9.8$

$AE = EH = 9.8$

$\hat{A}_1 = \hat{A}_2, \hat{D}_1 = \hat{H}_2 = 90^\circ \Rightarrow \triangle ADE \sim \triangle ABH \rightarrow \frac{DE}{BH} = \frac{AE}{AB} = \frac{AD}{AH} \rightarrow \frac{DE}{9.8} = \frac{3}{14} \rightarrow DE = 2.1$