

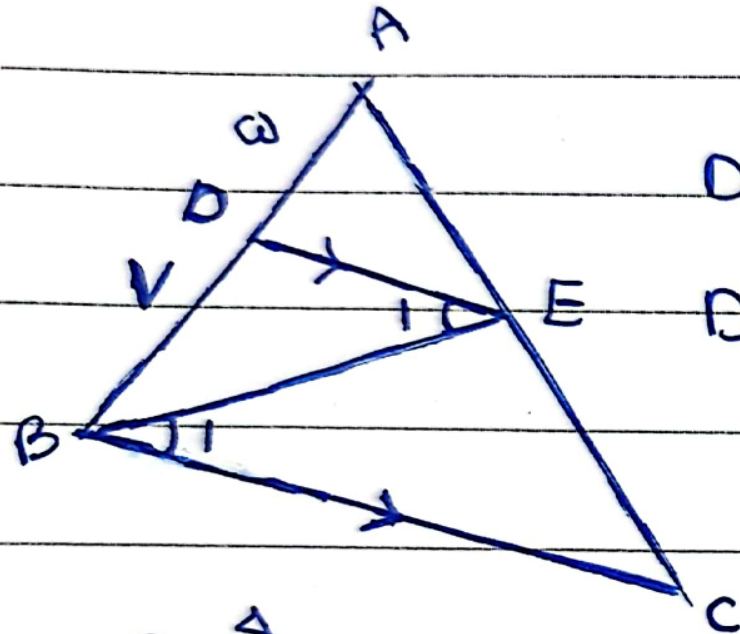
Subject:

Year :

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ترانه طاهریان - تالیف ۲۲ - یازدهم و دوازدهم

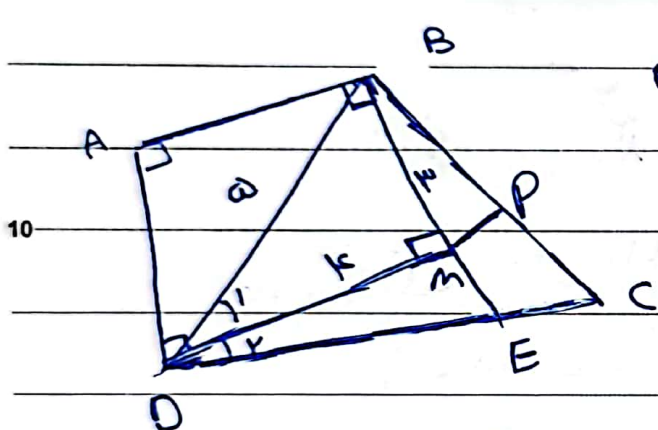


$$DE \parallel BC, EB/ \Rightarrow \angle E_1 = \angle B_1 \quad (1)$$

$$DE \parallel BC \xrightarrow{\text{مساوی}} \frac{DE}{BC} = \frac{AD}{AB} = \frac{12}{14}$$

$$\Rightarrow \frac{S_{\triangle BDE}}{S_{\triangle BCE}} = \frac{12}{14} = \boxed{2/7}$$

$$\frac{S_{\triangle BCE}}{S_{\triangle BDE}} = \frac{\frac{1}{2} \times DE \times BE \times \sin \angle E_1}{\frac{1}{2} \times BC \times BE \times \sin \angle B_1} = \frac{12}{14}$$



$$BD = \sqrt{\omega^2 + \epsilon^2} = \omega$$

$$AB \parallel BC, BD \perp \Rightarrow \hat{B} = \hat{D}_1$$

$$\hat{B} + \hat{D}_1 = \hat{D}$$

$$BD = BD$$

$$\hat{B} = \hat{D} \Rightarrow \triangle ADB \cong \triangle BDE$$

$$\Rightarrow \triangle ABD \cong \triangle BDE \Rightarrow M = 90^\circ$$

$$\left. \begin{array}{l} \text{DM} \\ \hat{D}_1 = \hat{D}_2 \\ M = 90^\circ \end{array} \right\}$$

$$\triangle DMB \cong \triangle DME \rightarrow DE = \omega, CE = \kappa, ME = BM$$

$$BM = ME, \text{ * } \hat{B} = \hat{E}$$

$$EC \parallel MP$$

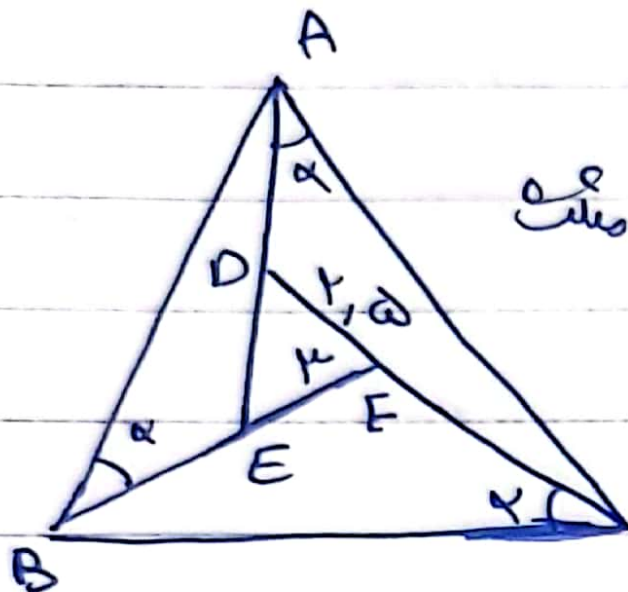
$$\left\{ \begin{array}{l} BP = PC \\ ME = MB \end{array} \right.$$

$$\Rightarrow \frac{MP}{CE} = \frac{BP}{BC} = \frac{BM}{BE} = \frac{1}{2}$$

$$\Rightarrow MP = \frac{1}{2} \times \epsilon = \boxed{\mu}$$

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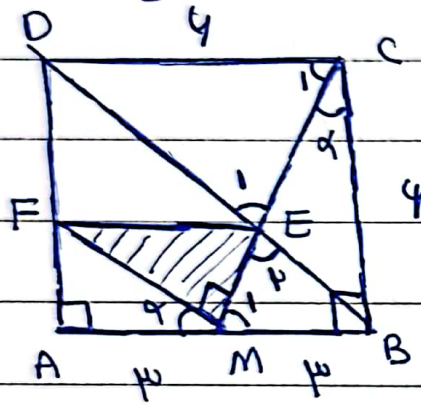
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$$\begin{aligned} & \triangle EFB \\ & \text{سوی (نوی) } \Rightarrow \angle EFB = \angle B - \alpha + \alpha = \angle B \quad (w) \\ & \triangle FBC \end{aligned}$$

$$\begin{aligned} & \triangle FDE \\ & \text{سوی (نوی) } \Rightarrow \angle FDE = \angle A - \alpha + \alpha = \angle A \\ & \triangle ABE \end{aligned}$$

$$\Rightarrow \triangle ABC \sim \triangle DEF \Rightarrow \frac{w}{1} = \frac{w}{AB} \Rightarrow AB = \boxed{9.4}$$



$$(MC)^P = (MB)^P + (BC)^P = 9 + 16 = 25 \quad (K)$$

$$\Rightarrow MC = 5$$

$$\left. \begin{array}{l} DC \parallel AB, \quad CM \parallel \Rightarrow \hat{C}_1 = \hat{M}_1 \\ \hat{C}_2 = \hat{M}_2 \end{array} \right\} \Rightarrow$$

$$\frac{DC}{MB} = \frac{CE}{ME} \Rightarrow \frac{CE}{ME} = \frac{4}{5} = \frac{4}{5} \Rightarrow CE = 4ME$$

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$$CE + ME = 5 \Rightarrow CE = 4ME \Rightarrow ME = 1, \quad CE = 4$$

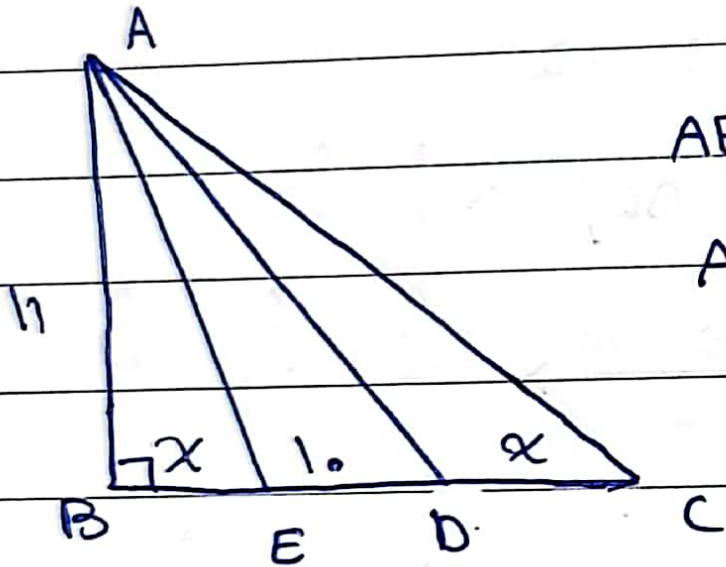
$$\left. \begin{array}{l} \hat{C}_1 = \hat{M}_1 = \alpha \\ \hat{A} = \hat{B} = 90^\circ \end{array} \right\} \Rightarrow \triangle CBM \sim \triangle FMA \Rightarrow \frac{MB}{AF} = \frac{MC}{MF} = \frac{BC}{AM}$$

$$\Rightarrow \frac{5}{MF} = \frac{4}{5} \Rightarrow MF = 6.25$$

$$S_{MFE} = \frac{FM \times ME}{2} = \frac{6.25 \times 4}{2} = 12.5$$

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$$5, 4$$



$$AE = \sqrt{11^2 + x^2} = \sqrt{x^2 + 121}$$

$$AEC \sim ACD \Rightarrow \frac{AE}{ED} = \frac{EC}{AE}$$

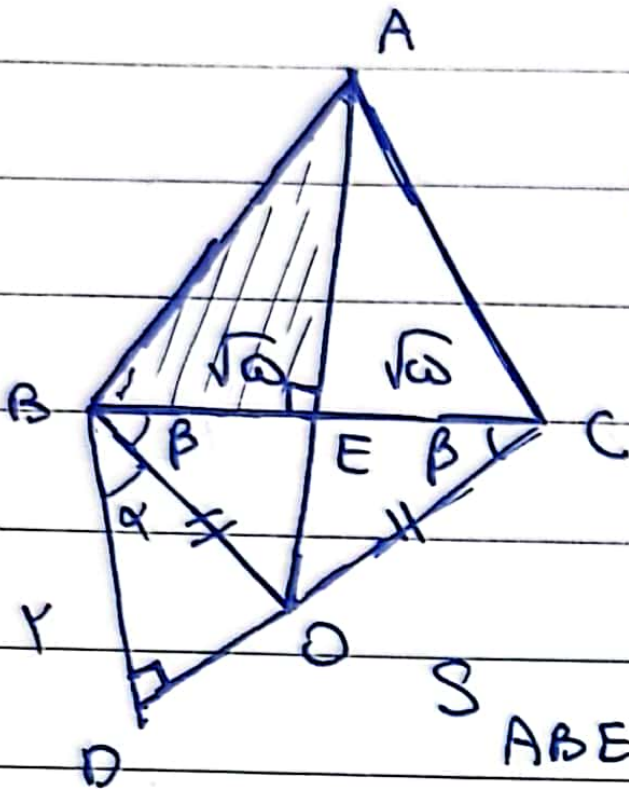
$$\Rightarrow AE^2 = ED \times EC$$

$$\Rightarrow 121 + x^2 = 1 \times (x + 1) = 1 + x$$

$$x^2 - 1 \times x + 121 = 0 \Rightarrow x = 10 \quad x = -11$$

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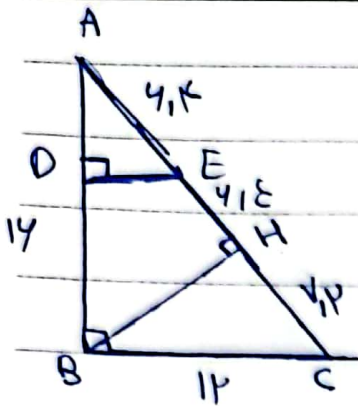


Calculation of Equilibrium forces FO (A)

$$BC = \sqrt{14 + 5} = 2\sqrt{5} \quad BE = BC = \sqrt{5}$$

$$\frac{1}{\sqrt{5}} = \frac{1}{AE} \Rightarrow AE = 2\sqrt{5}$$

$$S_{ABE} = \frac{AE \times BE}{2} = \frac{2\sqrt{5} \times \sqrt{5}}{2} = \boxed{5}$$



$$(AC)^2 = (AB)^2 + (BC)^2 = (14)^2 + (14)^2 = 392 \quad (1)$$

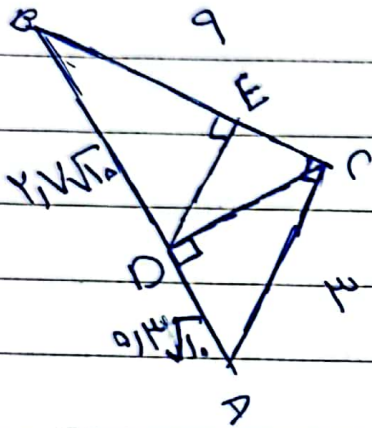
$$\Rightarrow AC = 14$$

$$(BC)^2 = CH \times AC \Rightarrow (14)^2 = 14 \times CH$$

$$\Rightarrow CH = \frac{196}{14} = 14 \quad AH = 14 - 14 = 0$$

$$\Rightarrow AE = EH = 4$$

$$DE \parallel BC \xrightarrow{\text{CWB}} \frac{AE}{AC} = \frac{DE}{BC} \Rightarrow \frac{4}{14} = \frac{DE}{14} \Rightarrow DE = 4$$



$$(AB)^2 = (AC)^2 + (BC)^2 = 9 + 11 \quad (2)$$

$$= 20 \Rightarrow AB = \sqrt{20}$$

$$(AC)^2 = AD \times AB \Rightarrow 9 = \sqrt{20} \times AD$$

$$\Rightarrow AD = \frac{9}{\sqrt{20}} \times \frac{\sqrt{10}}{\sqrt{10}} = 0,3\sqrt{10}$$

$$\Rightarrow BD = \sqrt{10} - 0,3\sqrt{10} = 0,7\sqrt{10}$$

$$\left. \begin{array}{l} DE \perp BC \\ AC \perp BC \end{array} \right\} \Rightarrow DE \parallel AC \xrightarrow{\text{CWB}} \frac{BE}{BC} = \frac{BD}{AB}$$

$$\frac{BE}{9} = \frac{0,7\sqrt{10}}{\sqrt{10}} = \frac{7}{10} \Rightarrow BE = 1,1$$