

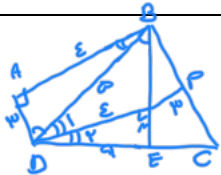
$$\frac{S_{BCE}}{S_{BDE}} = ? \quad BC \parallel DE \rightarrow \angle B_1 = \angle B_2$$

$$DE \parallel BC \xrightarrow{\text{قضیه}} \frac{DE}{BC} = \frac{AD}{AB} = \frac{AE}{AC} = \frac{2}{14}$$

$$\frac{S_{BCE}}{S_{BDE}} = \frac{\frac{1}{2} \times BC \times BE \times \sin E}{\frac{1}{2} \times DE \times BE \times \sin B} = \frac{15}{12} = \frac{5}{4}$$

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$$AB \parallel DC, BD \parallel \rightarrow B = D, \quad \begin{cases} \angle B_1 = \angle D_1 \\ BD = BD \end{cases} \rightarrow \triangle ABD \cong \triangle CDB$$

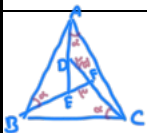
$$\angle B = \angle D \rightarrow \angle ADB = \angle CDE \rightarrow \angle 1 = 90^\circ$$

$$\left. \begin{array}{l} DM \perp MP \\ D_1 = D_2 \\ \hat{M} = 90^\circ \end{array} \right\} \rightarrow \triangle DMB \cong \triangle DME \rightarrow DE = 2, \quad CE = 2, \quad ME = BM = 3$$

$$EC \parallel MP \xrightarrow{\text{قضیه}} \left\{ \begin{array}{l} BP = PC \\ ME = MB \end{array} \right. \rightarrow \frac{MP}{CE} = \frac{BP}{BC} = \frac{BM}{BE} = \frac{1}{2} \rightarrow MP = \frac{1}{2} \times 2 = 1$$

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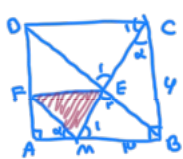
$$\angle FDE \rightarrow \angle FBC \text{ زاویه قائمه } \Rightarrow \angle FDE = \hat{B} - \alpha + \alpha = \hat{B}$$

$$\angle FDE \rightarrow \angle ABE \text{ زاویه قائمه } \Rightarrow \angle FDE = \hat{A} - \alpha + \alpha = \hat{A}$$

$$\rightarrow \triangle ABC \sim \triangle DEF \rightarrow \frac{DE}{AB} = \frac{2}{12} \rightarrow AB = 6$$

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$$MC^2 = 4^2 + 3^2 = 25 \rightarrow MC = 5$$

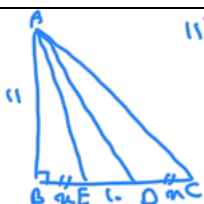
$$DC \parallel AB, CM \parallel \rightarrow \hat{C}_1 = \hat{M}_1, \quad \begin{cases} \angle C_1 = \hat{C}_1 \\ \angle M_1 = \hat{M}_1 \end{cases} \rightarrow \frac{DC}{MB} = \frac{CE}{ME} \rightarrow \frac{CE}{ME} = \frac{4}{3} = 2 \rightarrow CE + ME = 5 \rightarrow ME = 5$$

$$\hat{C}_1 = \hat{M}_1 = \alpha \rightarrow \hat{A} = \hat{B} = 90^\circ \rightarrow \triangle CBM \sim \triangle FMA \rightarrow \frac{MB}{AF} = \frac{BC}{AM} = \frac{MC}{MF}$$

$$\frac{5\sqrt{2}}{MF} = \frac{4}{3} \rightarrow MF = \frac{15\sqrt{2}}{4} \quad S_{\triangle MFE} = \frac{1}{2} \times \frac{15\sqrt{2}}{4} \times \sqrt{2} = \frac{15}{4}$$

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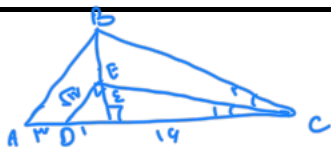
$$11^2 + 2^2 \rightarrow AE = \sqrt{121 + 4}$$

$$\triangle BEC \sim \triangle ACD \rightarrow \frac{BE}{ED} = \frac{EC}{AE} \rightarrow BE^2 = ED \times EC \rightarrow 121 + 4 = ED \times EC \rightarrow 121 + 4 = 121 + 4$$

$$\rightarrow 2^2 = 10 \times 2 + 4 \rightarrow 2 = 10, \quad m = 2$$

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$$EF^2 = DF \times FC \rightarrow 14 = 1 \times \frac{FC}{14}$$

$$ED = \sqrt{14+1} = \sqrt{15} \rightarrow 14^2 - (\sqrt{15})^2 = EC^2 \rightarrow EC = 4\sqrt{11}$$

$$BF^2 = AF \times FC = 4 \times 14 \rightarrow BF = 1$$

$$BC^2 = 1^2 + 14^2 = 197 \rightarrow B = 1\sqrt{197}$$

مشکل برآورد



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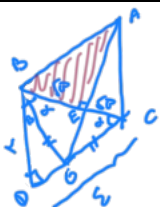


$$m^2 = 1^2 + 14^2 \rightarrow m = 1\sqrt{15} \rightarrow$$

$$\sqrt{(1\sqrt{15})^2 + (4\sqrt{10})^2} = 4\sqrt{10}$$



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$$BC = \sqrt{14+4} = 2\sqrt{10} \quad BE = BC = \sqrt{10}$$

$$\frac{4}{\sqrt{10}} = \frac{4}{AE} \rightarrow AE = 2\sqrt{10}$$

$$\rightarrow S_{ABE} = \frac{AE \times BE}{4} = \frac{2\sqrt{10} \times \sqrt{10}}{4} = 5$$

ف میده و مضایق و محدودیت



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

$$(AC)^2 = AD \times AB \rightarrow 9 = AD \times 2\sqrt{10}$$

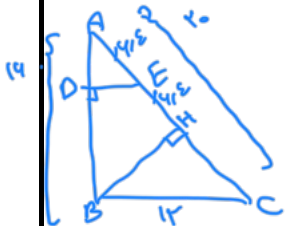
$$AD = 9/2\sqrt{10}$$

$$BD = 2\sqrt{10} - 9/2\sqrt{10} = 21/2\sqrt{10} \rightarrow \left. \begin{array}{l} DE \perp BC \\ AC \perp BC \end{array} \right\} \rightarrow DE \parallel AC \rightarrow \frac{BE}{BC} = \frac{BD}{AD}$$

$$\frac{BE}{9} = \frac{21/2\sqrt{10}}{2\sqrt{10}} \rightarrow BE = 11$$



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$$AC = \sqrt{14^2 + 12^2} = 20$$

$$BC^2 = CH \times AC \rightarrow 144 = CH \times 20 \rightarrow CH = 7.2$$

$$AE = AH = 9.6 \rightarrow \frac{DE}{12} = \frac{9.6}{20} \rightarrow DE = 9.6$$



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