

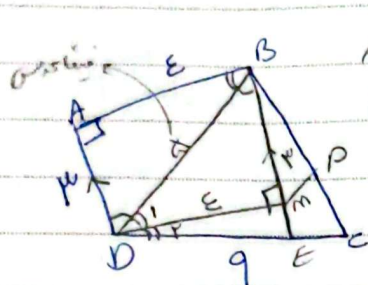
$$\frac{S_{BCE}}{S_{BDE}} = ?$$

مساحت مثلث BDE = 1/4 مساحت مثلث ABC

$$DE \parallel BC, \angle BDE = \angle B \Rightarrow \hat{E}_1 = \hat{B}_1$$

$$DE \parallel BC \Rightarrow \frac{DE}{BC} = \frac{AD}{AB} = \frac{AE}{AC} = \frac{1}{4}$$

$$\frac{S_{BCE}}{S_{BDE}} = \frac{\frac{1}{2} \times DE \times BE \times \sin \hat{E}}{\frac{1}{2} \times BC \times BE \times \sin \hat{B}} = \frac{1}{16}$$



$$AB \parallel DC, \angle BDE = \angle D \Rightarrow \hat{B} = \hat{D}, \frac{b}{a} \Rightarrow \text{مساحت مثلث BDE} = \frac{1}{4} \text{ مساحت المثلث DCE}$$

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

$$BD = BD$$

$$\hat{B} = \hat{D} \Rightarrow \hat{A} \hat{B} \hat{D} = \hat{D} \hat{B} \hat{E} \Rightarrow \hat{M} = 90^\circ$$

OM = 1/2

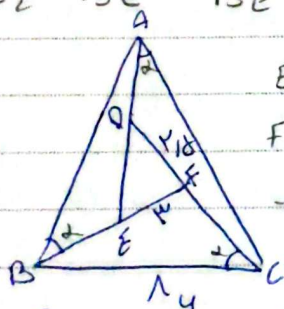
$$\hat{D}_1 = \hat{D}_2, \hat{M} = 90^\circ$$

$$\triangle DMB \cong \triangle DME \Rightarrow DE = 2, CE = 2, ME = BM = 1$$

$$BM = ME, \text{مساحت مثلث BDE} = \frac{1}{4} \text{ مساحت المثلث DCE}$$

$$EC \parallel MP \Rightarrow \frac{MP}{CE} = \frac{BP}{BC} = \frac{BM}{BE} = \frac{1}{4} \Rightarrow MP = \frac{1}{4} \times 2 = \frac{1}{2}$$

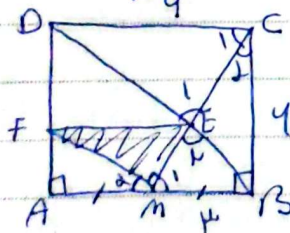
$$\frac{MP}{CE} = \frac{BP}{BC} = \frac{BM}{BE} = \frac{1}{4} \Rightarrow MP = \frac{1}{4} \times 2 = \frac{1}{2}$$



$$\angle FDE \Rightarrow \angle FBC \text{ (مساحت مثلث BDE)} \Rightarrow \angle FDE = \hat{B} - \alpha + \alpha = \hat{B} \text{ (مساحت مثلث BDE)}$$

$$\angle FDE \Rightarrow \angle AFE \text{ (مساحت مثلث BDE)} \Rightarrow \angle FDE = \hat{A} - \alpha + \alpha = \hat{A}$$

$$\Rightarrow \triangle ABC \sim \triangle DEF \Rightarrow \frac{DE}{AB} = \frac{EF}{AC} = \frac{1}{4} \Rightarrow AB = \frac{4}{1} \times 1 = 4$$



$$MC^2 = (4)^2 + (1)^2 = 17 \Rightarrow MC = \sqrt{17} \text{ (مساحت مثلث BDE)}$$

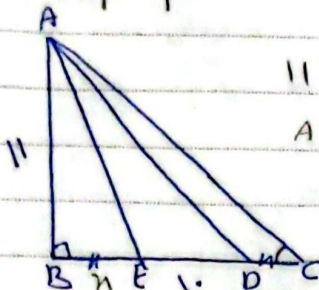
$$DC \parallel AB, \angle CDE = \angle A \Rightarrow \hat{C}_1 = \hat{A}_1, \frac{DC}{AB} = \frac{CE}{ME} \Rightarrow \frac{4}{1} = \frac{CE}{ME} \Rightarrow CE = 4ME$$

$$\Rightarrow \frac{CE}{ME} = \frac{4}{1} = 4 \Rightarrow CE + ME = \sqrt{17} \Rightarrow ME = \frac{\sqrt{17}}{5}$$

Arman

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

$$\frac{3\sqrt{5}}{MF} = \frac{4}{3} \Rightarrow MF = \frac{9}{4}\sqrt{5} \quad \text{So } MF \cdot E = \frac{1}{4} \times \frac{9}{4}\sqrt{5} \times \sqrt{5} = \frac{9}{4}$$

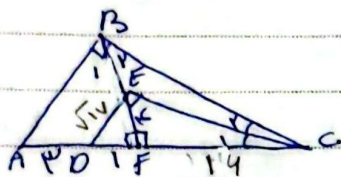


$$11^2 + n^2 \Rightarrow AE = \sqrt{121 + n^2} \quad \text{سوال 6) در مثل}$$

$$\triangle AEC \sim \triangle ACD \rightarrow \frac{AE}{ED} = \frac{EC}{AE} \Rightarrow AE^2 = ED \times EC$$

$$121 + n^2 = ED \times EC \Rightarrow 121 + n^2 = 100 + 10n$$

$$n^2 - 10n + 21 = 0 \Rightarrow n = 3, n = 7$$



$$EF^2 = DF \times FC \rightarrow 14 = 1 \times FC \quad \text{سوال 4)}$$

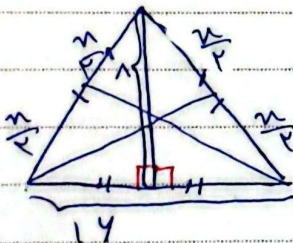
$$\Rightarrow FC = 14$$

$$ED = \sqrt{14 + 1} = \sqrt{15}$$

$$14^2 - (\sqrt{15})^2 = EC^2 \Rightarrow EC = 4\sqrt{15}$$

$$BF^2 = AF \times FC = 1 \times 14 \Rightarrow BF = 1$$

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

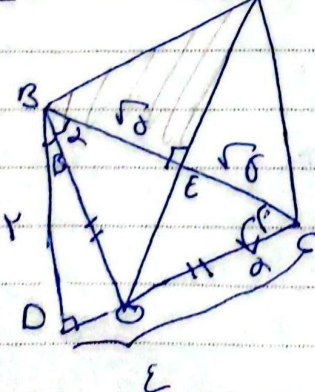


$$n^2 = 1^2 + 14^2 \Rightarrow n = 1\sqrt{197}$$

به سبب دار بودن آن تقاطع و نه به سبب آن صاف بودن
قائم الزاویه

$$\sqrt{(1\sqrt{197})^2 + (4\sqrt{15})^2} = 4\sqrt{10}$$

در زمینه مشابهی است



سوال 8) FO میانه و نیمه ز میزنند

$$BC = \sqrt{14 + 25} = 2\sqrt{5} \quad BE = BC = \sqrt{5}$$

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

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

$$= 5$$

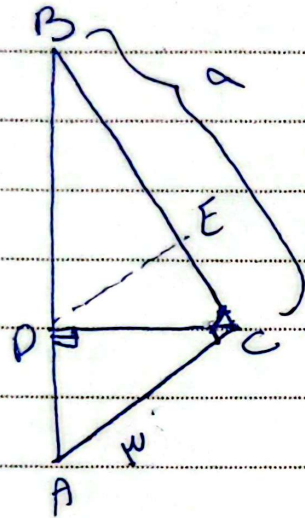
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$$AB = \sqrt{1+9} = \sqrt{10}$$

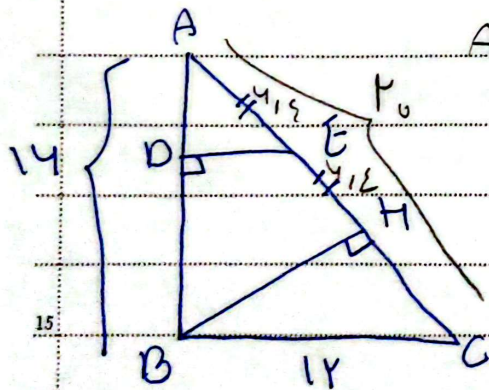
$$(AC)^2 = AD \times AB \Rightarrow 9 = AD \times \sqrt{10}$$

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

$$BD = \sqrt{10} - 9/\sqrt{10} = 1/\sqrt{10}$$

$$\left. \begin{array}{l} DE \perp BC \\ AC \perp BC \end{array} \right\} \Rightarrow DE \parallel AC \rightarrow \frac{BE}{BC} = \frac{BD}{AD}$$

$$\frac{BE}{9} = \frac{1/\sqrt{10}}{\sqrt{10}} \Rightarrow BE = 1/10$$



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

$$BC^2 = CH \times AC \Rightarrow 144 = CH \times 20 \Rightarrow CH = 12/5$$

$$AE = AH = 4/5$$

$$\frac{DE}{12} = \frac{4/5}{20} \Rightarrow DE = 1/10$$