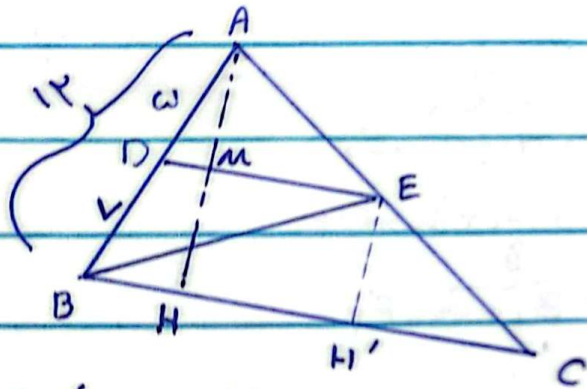


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پریا حسینی

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$$\frac{S_{\triangle ADE}}{S_{\triangle ABC}} = \left(\frac{1}{2}\right)^2 = \frac{1}{4}$$

$$S_{\triangle ABC} = 12 \text{ cm}^2 = \frac{AH \times BC}{2} \rightarrow AH \times BC = 24 \text{ cm}^2$$

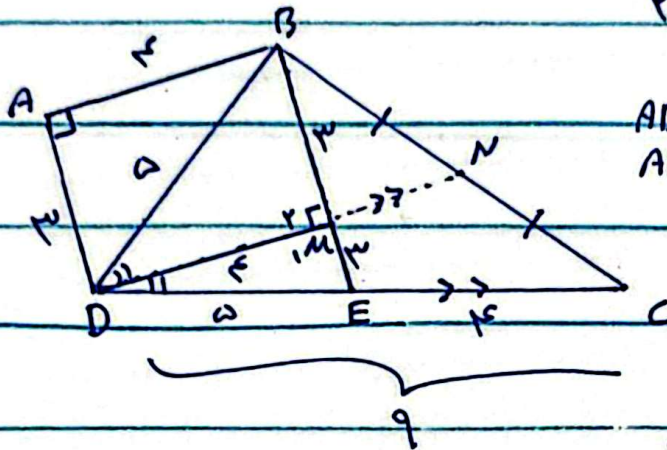
$$S_{\triangle ADE} = 3 \text{ cm}^2$$

$$EH' = MH = \frac{1}{2} AH$$

$$S_{\triangle BCE} = \frac{EH' \times BC}{2} = \frac{\frac{1}{2} AH \times BC}{2} = \frac{1}{4} \times 24 \text{ cm}^2 = 6 \text{ cm}^2$$

$$S_{\triangle BDM} = S_{\triangle ABC} - S_{\triangle ADE} - S_{\triangle BCE} = 12 \text{ cm}^2 - 3 \text{ cm}^2 - 6 \text{ cm}^2 = 3 \text{ cm}^2$$

$$\frac{S_{\triangle BCE}}{S_{\triangle BDM}} = \frac{6 \text{ cm}^2}{3 \text{ cm}^2} = \frac{12}{6} = 2$$



$$\angle BDM = \angle BDC \rightarrow \angle BDM = \angle MDC$$

$$\left. \begin{array}{l} AD \parallel BM \\ AB \parallel DM \\ \hat{A} = 90^\circ \end{array} \right\} \text{ABDM} \rightarrow \text{chữ nhật}$$

$$\left. \begin{array}{l} \angle BDM = \angle MDC \\ DM = DM \\ \hat{M}_1 = \hat{M}_2 = 90^\circ \end{array} \right\} \begin{array}{l} \triangle BDM \cong \triangle DME \\ BM = ME = 4 \end{array}$$

$$\left. \begin{array}{l} N \rightarrow BC \text{ trung điểm} \\ BM = ME \end{array} \right\} \text{định lý} \rightarrow MN \parallel EC \rightarrow \frac{MN}{EC} = \frac{BM}{BE} \rightarrow 4$$

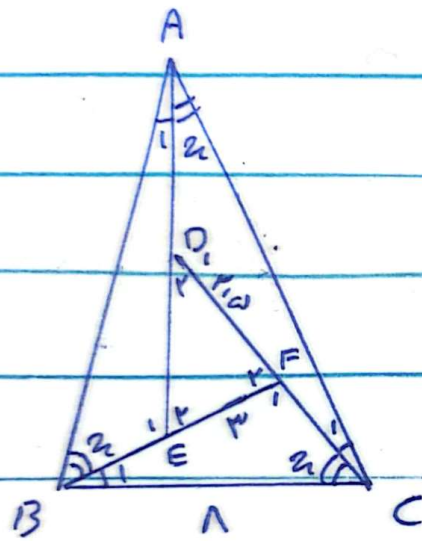
$$BD^2 = AD^2 + AB^2 = 9 + 16 = 25 \rightarrow BD = 5 = DE$$

$$EC = 9 - DE = 9 - 5 = 4$$

$$\frac{4}{9} = \frac{MN}{4} \rightarrow MN = \frac{16}{9}$$

سریب اسی

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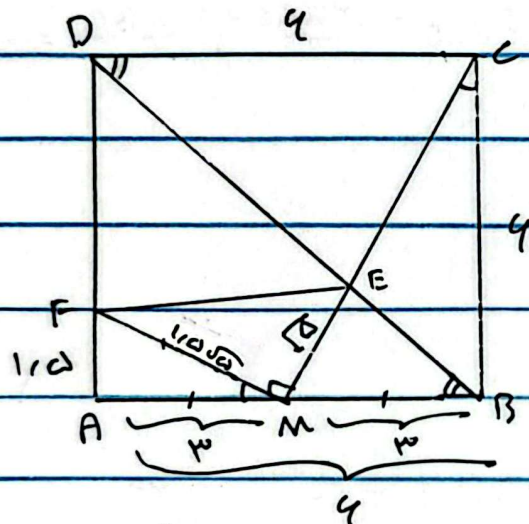
$$\begin{aligned}
 |A_0 - (A_1 + a_1)| &= E_1 = |A_0 - E_1| \rightarrow \overbrace{A_1 + a_1}^{\hat{A}} = E_1 \\
 |A_0 - (C_1 + a_1)| &= D_1 = |A_0 - D_1| \rightarrow \overbrace{C_1 + a_1}^{\hat{C}} = D_1 \\
 |A_0 - (B_1 + a_1)| &= F_1 = |A_0 - F_1| \rightarrow \overbrace{B_1 + a_1}^{\hat{B}} = F_1
 \end{aligned}$$

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$$\left. \begin{aligned} \hat{B} &= \hat{F}_1 \\ \hat{C} &= \hat{D}_1 \\ \hat{A} &= \hat{E}_1 \end{aligned} \right\} \Delta ABC \sim \Delta DFE \rightarrow \frac{AB}{EF} = \frac{AC}{ED} = \frac{BC}{DF}$$

$$\frac{AB}{EF} = \frac{BC}{DF} \rightarrow \frac{AB}{\mu} = \frac{\Lambda}{\mu_{10}}$$

$$AB = \frac{\mu \times \Lambda}{\mu_{10}} = \boxed{9.4}$$



$$\left. \begin{array}{l} \hat{BCM} = \hat{AMF} \\ \hat{A} = \hat{B} = 90^\circ \end{array} \right\} \underbrace{\triangle AFM \sim \triangle MBC}_{ii}$$

$$\frac{AM}{BC} = \frac{AF}{MB} = \frac{FM}{MC}$$

$$\frac{3}{4} = \frac{AF}{3} \rightarrow AF = \frac{9}{4} = \frac{3}{4} = 1, \text{ (d)}$$

$$FM^2 = AF^2 + AM^2 \rightarrow FM^2 = \frac{9}{4} + \frac{9}{4} = \frac{18}{4} \rightarrow FM = \frac{3\sqrt{2}}{2} = 1,414$$

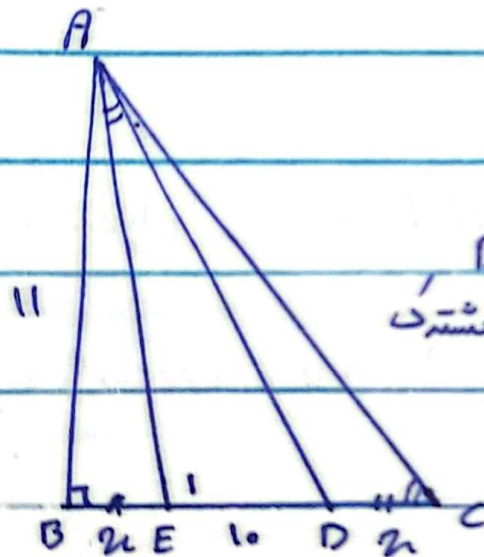
$$\left. \begin{array}{l} \text{مقابلتي (ج) } \hat{MEB} = \hat{DEC} \\ DC \parallel MB \rightarrow \hat{CDB} = \hat{DBA} \end{array} \right\} \text{ii} \rightarrow \triangle DCE \sim \triangle MBE \rightarrow \frac{MB}{DC} = \frac{BE}{DE} = \frac{ME}{EC} = \frac{1}{3}$$

$$MC^2 = MB^2 + BC^2 \rightarrow 9 + 3^2 = MC^2 \rightarrow MC = 3\sqrt{2}$$

$$\left. \begin{array}{l} ME \rightarrow 2 \\ EC \rightarrow 4 \end{array} \right\} \rightarrow MC = 3\sqrt{2}$$

$$3\sqrt{2} = 3\sqrt{2} \rightarrow 2 = \sqrt{2} \rightarrow 2 = MF = \sqrt{2}$$

$$S_{MFE} = \frac{ME \times FM}{2} = \frac{\sqrt{2} \times 1,414\sqrt{2}}{2} = \frac{1,414}{2} = 0,707$$



$$\left. \begin{array}{l} \hat{DAE} = \hat{ACD} \\ \hat{E}_1 = \hat{E}_1 \end{array} \right\} \Delta AED \sim \Delta AEC \Rightarrow \frac{AE}{CE} = \frac{AD}{AC} = \frac{DE}{AE}$$

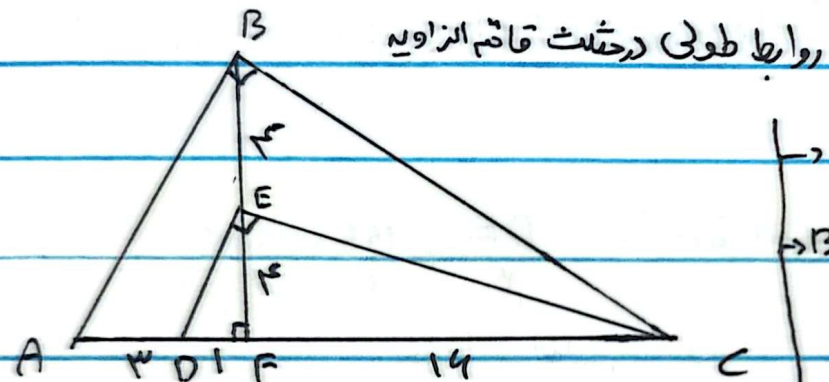
$$AE^2 = x^2 + 11^2 \rightarrow AE = \sqrt{x^2 + 121}$$

$$\frac{AE}{CE} = \frac{DE}{AE} \rightarrow \frac{\sqrt{x^2 + 121}}{10 + x} = \frac{10}{\sqrt{x^2 + 121}}$$

$$x^2 + 121 = 100 + 10x \rightarrow x^2 - 10x + 21 = 0 \rightarrow (x - 3)(x - 7) = 0 \rightarrow \left. \begin{array}{l} x = 3 \\ x = 7 \end{array} \right\}$$

پیرا امینی

4



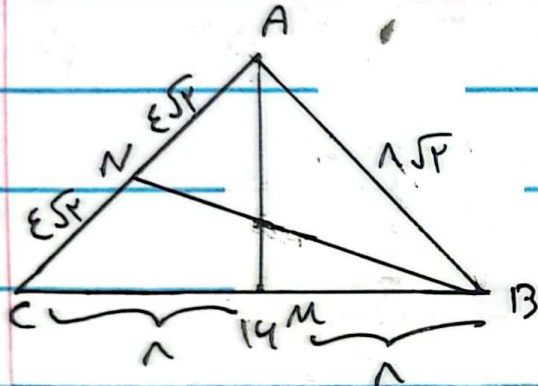
$$\rightarrow EF^2 = DF \times FC \rightarrow 14 = 1 \times FC \rightarrow FC = 14$$

$$\rightarrow BF^2 = AF \times FC \rightarrow 5 \times 14 = BF^2 = 45 \rightarrow BF = 1$$

$$BE = BF - EF = 1 - 5 = 4$$

$$\rightarrow BC^2 = FC \times AC = 14 \times 14 = 320$$

$$BC = \sqrt{320} = 1\sqrt{20}$$



اندازه میانه وارد بر قاعده در مثلث متساوی الساقین برابر طول ارتفاع است.

$$AC^2 = CM^2 + AM^2 \rightarrow AC = \sqrt{12^2 + 14^2} = 10\sqrt{2}$$

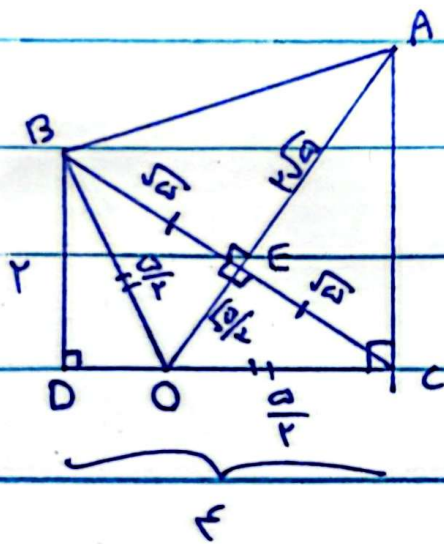
$$AB^2 = MB^2 + AM^2 \rightarrow AB = \sqrt{12^2 + 14^2} = 10\sqrt{2}$$

$$AM = \frac{14}{2} = 7$$

$$AB^2 + BC^2 = 2(BN^2 + AN^2) \rightarrow 12^2 + 14^2 = 2(BN^2 + 4^2) \rightarrow$$

$$340 = 2BN^2 + 32 \rightarrow 2BN^2 = 340 - 32 \rightarrow 2BN^2 = 308 \rightarrow BN^2 = 154$$

$$BN = 7\sqrt{10}$$



$$OC = a = OB$$

$$OD = x - a \quad BD^2 + OD^2 = OB^2 \rightarrow y^2 + (x - a)^2 = a^2$$

$$x^2 + 14 + a^2 - 2ax = a^2 \rightarrow a = \frac{x^2}{2} = \frac{a}{2}$$

(5)

$$\left. \begin{array}{l} OE = OE \\ OB = OC \end{array} \right\} \text{وفا}, \triangle OBE \cong \triangle OEC$$

$$BC^2 = BD^2 + DC^2 \rightarrow x^2 + 14 = BC^2 \rightarrow BC = \sqrt{x^2 + 14} = 2\sqrt{10} \rightarrow BE = CE = \frac{2\sqrt{10}}{2} = \sqrt{10}$$

$$OE^2 + BE^2 = OB^2 \rightarrow \frac{x^2}{4} = OE^2 + a \rightarrow \frac{x^2 - x^2}{4} = OE^2 \rightarrow OE = \frac{\sqrt{10}}{2}$$

$$\text{روابطی} \rightarrow EC^2 = OE \times AE \rightarrow a = \frac{\sqrt{10}}{2} \times AE \rightarrow AE = 2\sqrt{10}$$

$$S_{\triangle ABE} = \frac{BE \times AE}{2} = \frac{\sqrt{10} \times 2\sqrt{10}}{2} = \boxed{10}$$

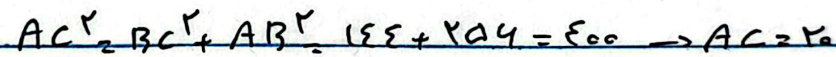
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→ $WDE = BE$

~~$$EC = \frac{DE^Y}{Y_{DE}} = \frac{DE}{Y}$$~~

$$BE = \gamma \times DE \xrightarrow{DE = \gamma_1 V} BE = \gamma \times \gamma_1 V = \gamma_1 V \quad \boxed{\text{Ans}}$$



$$\angle AEF \cong \angle EHF \cong \angle AHE \rightarrow AE = EF = EH$$

$$\text{طبق تقسيم تالى} \rightarrow \frac{DE}{BC} = \frac{AB}{AC} \rightarrow \frac{DE}{14} = \frac{4.5}{20} \rightarrow DE = \underline{\underline{3.15}}$$