

$$DE \parallel BC \Rightarrow \triangle ADE \sim \triangle ABC$$

(1)

$$AD=5, DB=7 \Rightarrow AB=12$$

$$\frac{AD}{AB} = \frac{5}{12} \rightarrow \frac{DE}{BC} = \frac{5}{12}$$

$$\frac{S_{BCE}}{S_{BDE}} = \frac{BC}{DE} = \frac{12}{5}$$

ارتفاع مشترک

$$BM \parallel AD$$

$$DM \parallel AB$$

(2) متوازی الاضلاع

$$BM = \frac{1}{2} BD \rightarrow BM \text{ نصف } BD$$

$$\frac{BM}{MC} = \frac{BD}{DC}$$

$$BD=3, DC=9 \rightarrow \frac{BM}{MC} = \frac{1}{3}$$

$$BM = \frac{1}{4} BC$$

$$BC \text{ فاصله } M \text{ وسط } BC \rightarrow \left| \frac{1}{4} - \frac{1}{4} \right| BC = \left(\frac{1}{4} BC \right)$$

$$\frac{AB}{1} = \frac{15}{4} \rightarrow AB = \left(\frac{15}{4} \right) \quad \frac{AB}{BC} = \frac{DE}{EF} \quad \leftarrow \text{زاویه برابر}$$

$$\frac{S_{\text{مستطیل}}}{S} = \frac{1}{1}$$

$$S_{\text{مربع}} = 4^2 = 16$$

$$S_{\text{مستطیل}} = \frac{16}{1} = 16$$

(3) زاویه برابر
مساحت مستطیل

(4) در حالت (1) BC است ① ترتیب ترتیب C ② دورتر است E

$$BC = 10, BE = 4$$

$$DC = 4 - 4$$

صحت براری

(4) $\hat{CED} = \hat{ABC} = 90^\circ$ ← حالت زیر مستقیم

$DE = DF + FE = 1 + 4 = 5$

$\frac{BC}{AD} = \frac{DE}{DF}$

$\frac{BC}{3} = \frac{5}{1} \Rightarrow BC = 15$

(5) مثلث مستوی الساقین - میان واری بر قاعده هم ارتفاع و هم عمود منصف است

$2 = 5$

$1^2 + 1^2 = x^2$

میان واری بر قاعده = 1

$x^2 = 128$

$x = 8\sqrt{2}$

میان واری بر ساق = $\sqrt{(8\sqrt{2})^2 - (4)^2} = \sqrt{128 - 16} = 4\sqrt{7}$

$BD = 2$ $CD = 4$

$\hat{ABC} = 90^\circ$

E وسط سطح قائم

$\frac{BD}{DC} = \frac{1}{4} = \frac{1}{4}$

$S_{ABE} = \frac{1}{4} \times 2 \times 4 = 2$

(6) $\frac{ABC}{\hat{C}}$ مستوی الساقین $AD \parallel BC$

$AB = \sqrt{12^2 + 4^2} = 13$

$\frac{BE}{BC} = \frac{AD}{AB}$

$AD = 3$

$\frac{BE}{4} = \frac{3}{13} \Rightarrow BE = \frac{12}{13}$

$AD = AE \Rightarrow D, E$ وسط

$\hat{C} = \hat{ABC}$

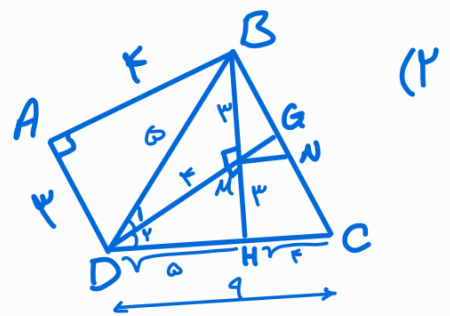
$AC = \sqrt{12^2 + 12^2} = 12\sqrt{2}$

$\Rightarrow DE \parallel BC$

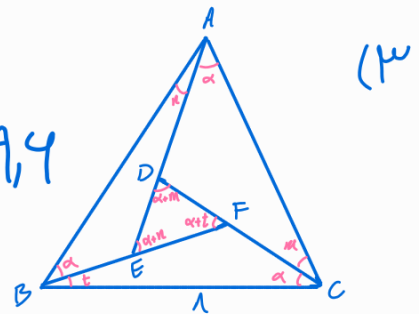
$DE = \frac{1}{2} BC = 6$

dotnote

$\angle DMH \leftarrow \hat{D}_p = \hat{D}_1$ BDM هم‌انشت هستند
 در مثلث BHC ، BMN با نسبت ۲ مقسوم‌اند پس $\frac{1}{2} HC$ است
 بنابراین فاصله M از وسط ضلع BC برابر ۲ است



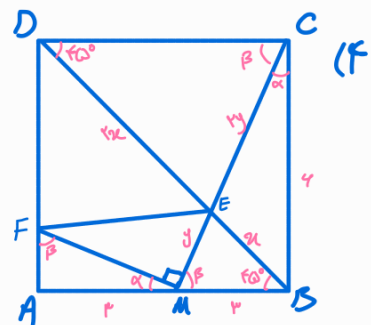
$$\triangle ABC \sim \triangle DEF \rightarrow \left. \begin{matrix} F=B \\ D=C \\ A=E \end{matrix} \right\} \rightarrow \frac{AB}{\mu} = \frac{1}{1.5} \rightarrow AB = 1.5$$



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

$$\tan F = \frac{\mu}{AF} = \tan M = \frac{BC}{MB} = 1 \rightarrow AF = \frac{\mu}{1}$$

$$FM^2 = AF^2 + AM^2 \rightarrow MF = \frac{5\sqrt{2}}{2}$$

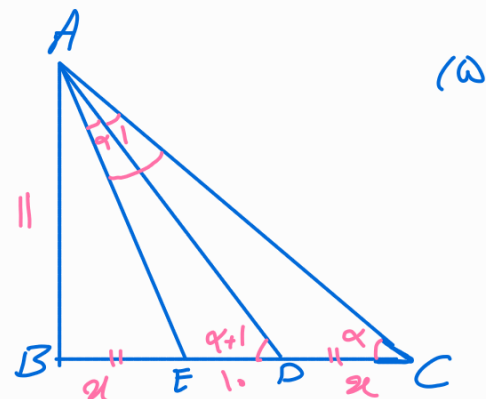


$$DEC, MEB \text{ (در مثلث)} = \frac{4}{\mu} = 1 \rightarrow \mu y = 5\sqrt{2} \rightarrow y = \sqrt{2}$$

$$S_{FME} = \frac{1}{2} ME \times MF = \frac{10}{2}$$

$$\triangle CAE \approx \triangle AED \rightarrow \left. \begin{matrix} \alpha = \alpha \\ \alpha + 1 = \alpha + 1 \\ \hat{E} = \hat{E} \end{matrix} \right\} \rightarrow \frac{AE}{ED} = \frac{EC}{AE}$$

$$\frac{\sqrt{2^2 + 1^2}}{1} = \frac{2+1}{\sqrt{2^2 + 1^2}} \rightarrow 2 = 1.5$$

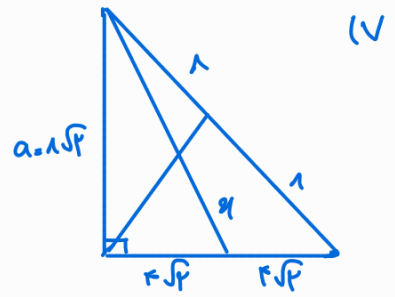


$$EF^2 = DF \times FC \rightarrow FC = 14 \quad BC^2 = FC \times AC \rightarrow BC = 10$$

(4)

$$a^r + a^r = 14^r \rightarrow a = 1\sqrt{2}$$

$$g_1^T = (1\sqrt{r})^T + (F\sqrt{r})^T \rightarrow g_1 = F\sqrt{10}$$



$$\gamma_{\alpha+\beta} = 90^\circ$$

$$BD' + DC' = BC' \rightarrow BC = r\sqrt{a} = rBE = rEC$$

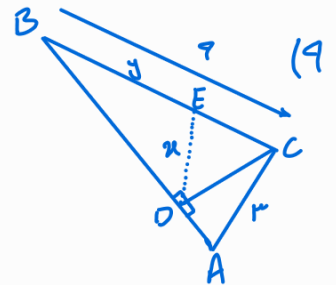
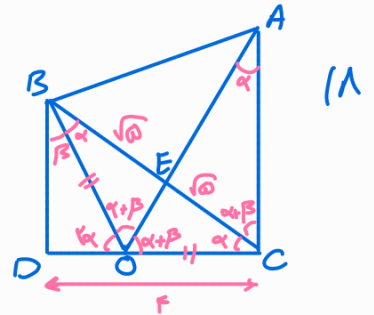
$$\rightarrow BE = EC = \sqrt{a}$$

$$\frac{r}{\sqrt{\omega}} = \frac{F}{AE} = \frac{r\sqrt{\omega}}{\omega} \rightarrow AE = r\sqrt{\omega}$$

$$S_{ABE} = \frac{1}{r} AE \times BE = \omega$$

$$\frac{d}{\mu} = \frac{y}{q} \rightarrow y = \mu x$$

$$x^T = y(1-y) = \mu_x(1-\mu_x) \rightarrow x = T, V, y = 1, 1$$



$$AB^{\vee} + BC^{\vee} = AC^{\vee} \rightarrow AC = \perp_0$$

$$\triangle ADE \sim \triangle ABH \rightarrow \begin{cases} \hat{A} = \hat{A} \\ \hat{D} = \hat{H} = 90^\circ \end{cases} \rightarrow \frac{DE}{BH} = \frac{AE}{AH} \quad (1)$$

$$S_{ABC} = \frac{AB \times BC}{r} = \frac{BH \times AC}{r} \rightarrow BH = 9,4$$

$$\triangle ABC \rightarrow 14^\circ = \angle H \times 2 \rightarrow \angle H = 7^\circ \rightarrow \angle E = \frac{\angle H}{2} = 3,5^\circ$$

$$\textcircled{1} \rightarrow \frac{DE}{BH} = \frac{AE}{14} = \frac{DE}{9,4} = \frac{9,4}{14} \rightarrow DE = 6,14$$

