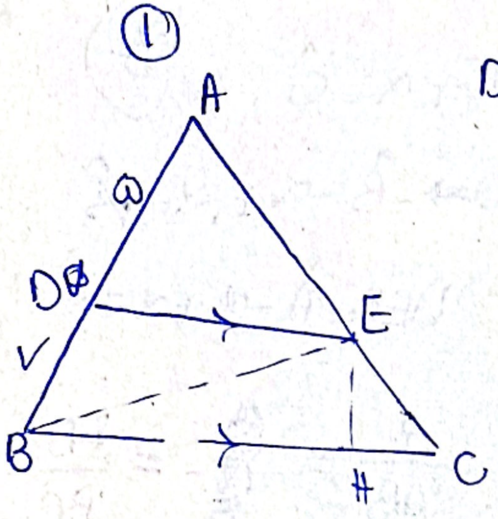
نوشین ادریسی ـ یازدهم سری B

(۱)



DE ∥ BC ~~ADE ∼ ABC~~

(۱)

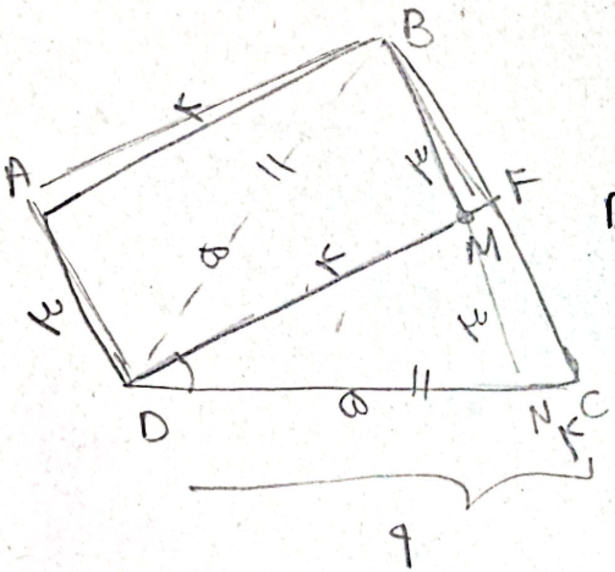
$$\frac{S_{BCE}}{S_{BDE}} = \frac{\frac{۱}{۲} \times \frac{۷}{۱۲} h \times BC}{\frac{۱}{۲} \times \frac{۵}{۱۲} BC \times \frac{۷}{۱۲} h} = \boxed{\frac{۱۲}{۵}}$$

$$\frac{AD}{AB} = \frac{DE}{BC} \Rightarrow DE = \frac{۵}{۱۲} BC$$

$$\frac{AE}{AC} = \frac{۵}{۱۲} \Rightarrow \frac{AE}{AC - AE} = \frac{۵}{۱۲ - ۵}$$

$$\frac{CE}{CA} = \frac{EH}{AB}$$

(۲)



BM ∥ AD $\quad AD = BM = ۳$

$$AB^۲ + AD^۲ = DB^۲$$

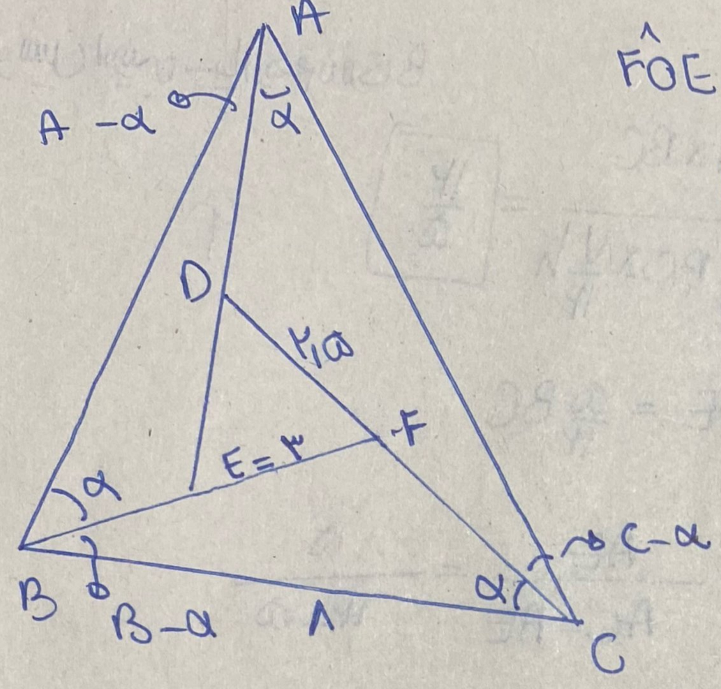
$$۹ + ۱۶ = ۲۵ \quad DB = ۵$$

$$BCD = ۲BDM \Rightarrow B\hat{D}M = M\hat{D}C = \alpha$$

DM نیمساز و ارتفاع مثلث BON ⇐ در نتیجه BON متساوی‌الساقین و DM میانه است

$$MN = BM \quad \frac{BM}{BN} = \frac{MF}{NC} \Rightarrow \frac{۳}{۹} = \frac{MF}{۴} \to \boxed{۲}$$

(3)



زاویه ها

$\hat{FOE} \to \hat{ADC}$ $\quad \hat{FDC} = \hat{C} - \alpha + \alpha = \hat{C}$

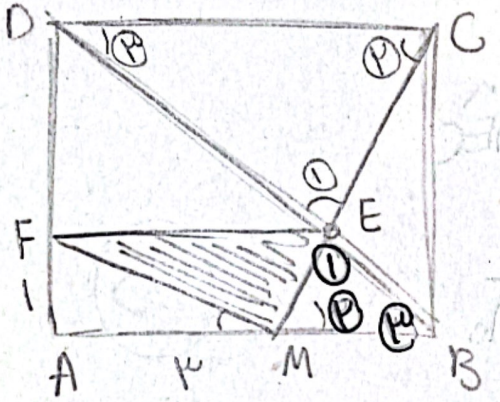
$\hat{EFD} \to \hat{EBC}$ زاویه خارجی $\quad EFD \Rightarrow \hat{B} - \alpha + \alpha = \hat{B}$

$\hat{DEF} \to \hat{ABE}$ زاویه خارجی $\quad DEF = \hat{A} - \alpha + \alpha = \hat{A}$

$ABC \simeq DEF \Rightarrow \frac{۳}{AB} = [illegible] = \frac{FD}{BC}$

$AB = \frac{۴۸}{۵}$

نوشین اردبی - یازدهم سری (B)



$AM=MB=3$ $\hat{BCE}=\hat{AMF}$

$B\hat{C}M \sim A\hat{M}F$ $\quad \frac{AM}{BC}=\frac{AF}{BM}=\frac{MF}{CM}$

$A=B=90^\circ$ $F=M$ $\quad AF=\frac{3}{2}$ $\quad MF=\frac{3\sqrt{20}}{4}=\frac{3\sqrt{5}}{2}$

$\hat{E}_1=\hat{E}_2$, $\hat{M}_2=\hat{C}_2$, $\hat{D}_2=\hat{B}_2$

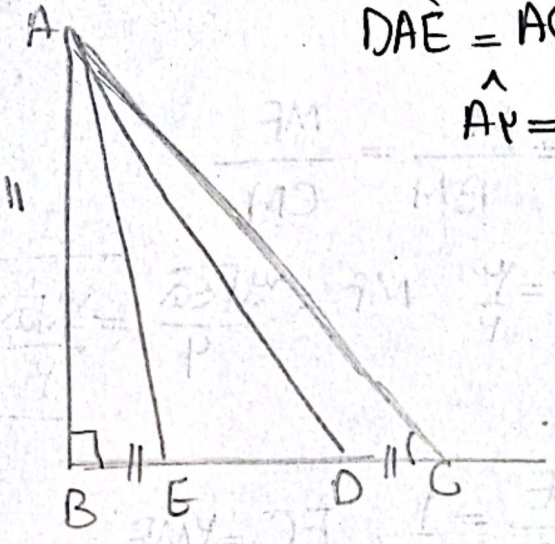
$DEC \backsim DEM$ $\quad \frac{MB}{DC}=\frac{ME}{EC}=\frac{1}{2}$ $\quad EC=2ME$

$MC=EC+ME$ $\quad 2ME+ME=3\sqrt{5}$

$ME=\sqrt{5}$

$S_{F\hat{M}E}=\frac{\frac{3\sqrt{5}}{2}\times\sqrt{5}}{2}=\frac{15}{4}=3{,}75$

نویسنده اردیبه



$D\hat{A}E = A\hat{C}D$ ~~$BD = BE = DC$~~

$\hat{A}_2 = \hat{C}$ $\hat{E}_2 = \hat{E}_2$ ~~$\triangle$~~ $A\hat{E}D \backsim AEC$

$$\frac{ED}{AE} = \frac{AE}{ED+10}$$

(5)

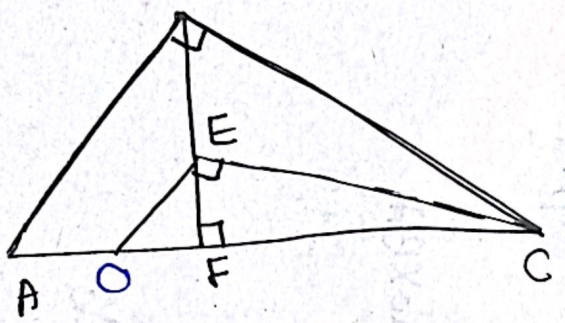
$$AE^2 = 10CD + 100 = 121 + CD^2$$

$$CD^2 - 10CD + 21 = AD^2$$

$$D = 14 \quad \frac{10 \pm 4}{2} \begin{cases} 7 \\ 3 \end{cases}$$

□ BC دو همگرا می‌تواند داشته باشد

نوشین اردیبه



$OF=1 \quad EF=4 \quad AD=9 \quad BC=?$

(6)

$DE^2=1+14 \Rightarrow DE=\sqrt{17}$

$EF^2=OF\times FC \Rightarrow \boxed{FC=14}$

$ABC \sim BAF$

$\frac{FA}{BA}=\frac{BF}{BC}=\frac{AB}{AC}$

$AB^2+BC^2=\underbrace{100}_{AC^2}$

$BC=\sqrt{325}$

$AB^2=80 \quad AB=\sqrt{80}$

$BC^2=4+14 \quad BC=\sqrt{18}=3\sqrt{2}$

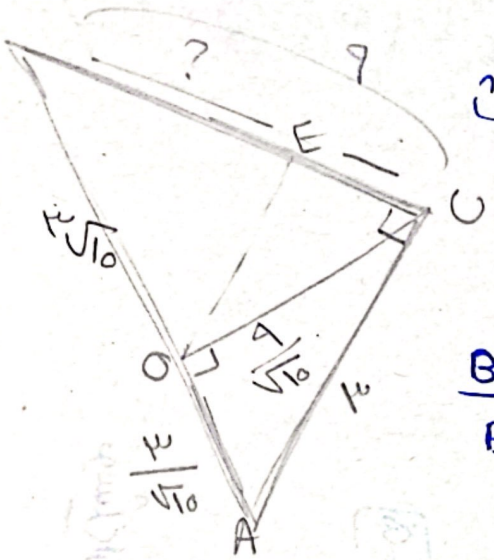
$BOE \sim COE$ (دو مثلث و زاویه بین)

$\frac{AC}{BC}=\frac{AE}{OC}=\frac{EC}{BD} \quad AE=2\sqrt{2}$

(8)

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

نوشتن اردیبهشت - یازدهم سری (B)



طبق فیثاغورث $BA = 3\sqrt{10}$ (۹)

$$DC \times BA = AC \times BC \qquad DC = \frac{27}{3\sqrt{10}} = \frac{9}{\sqrt{10}}$$

$$\frac{BE}{BC} = \frac{DE}{AC} = \frac{BD}{BA}$$

$$AD^2 = 9 - \underbrace{DC^2}_{\frac{81}{10}} = 0.9$$

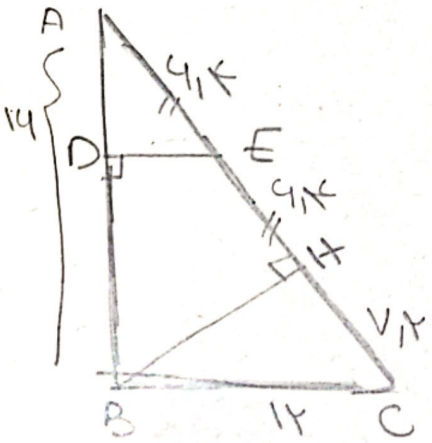
$$AB - AD = 3\sqrt{10} - \frac{3}{\sqrt{10}} \qquad AD = \frac{3}{\sqrt{10}}$$

$$= \frac{27\sqrt{10}}{10} = \frac{9}{10}$$

$$\frac{BE}{BC} = \frac{9}{10}$$

$$BE = 8.1$$

نوشتن اردیبهشت - یازدهمین سری B



$$\frac{AD}{AB} = \frac{DE}{BC} \qquad \frac{4.8}{14} = \frac{DE}{12} \Rightarrow DE = 4.8 \quad (b)$$

$$AB \times BC = BH \times AC \qquad H \times 12 = 20 \times \underbrace{BH}_{9.6}$$

$$(9.6)^2 + x^2 = 12^2$$

$$x = 7.2$$

$$AC^2 = 14^2 + 12^2 \qquad AC = 20$$