

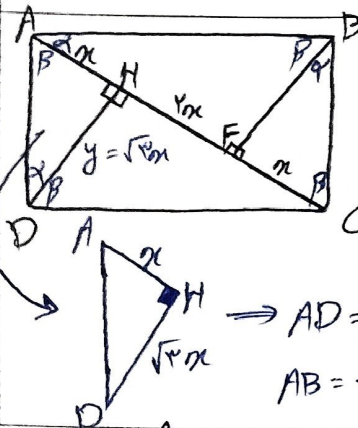
$AE=8 \quad BH \parallel BC \xrightarrow{\text{وحد}} \hat{D}_1 = \alpha \Rightarrow BH \parallel D$

$\hat{D}_1 = \hat{\alpha} = E_1 = \epsilon \Delta \Rightarrow x+x = 2x = 11$

$DH = BH = EH = x$

$BH \parallel BC \xrightarrow{\text{وحد}} \frac{AE + \Delta_1 \Delta}{AE + 11} = \frac{\Delta_1 \Delta}{11}$

$\Delta AE - \Delta_1 \Delta AE = \frac{11}{f} - \epsilon \epsilon \longrightarrow 2, \Delta AE = 14, \Delta \Rightarrow AE = \frac{14, \Delta}{2, \Delta} = 4, 4$



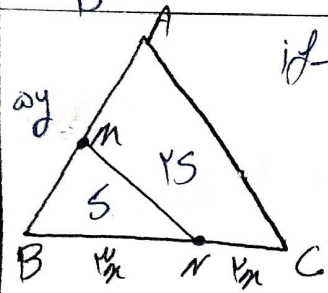
$\frac{S_{ABCD}}{S_{AHD}} = 8 \longrightarrow \alpha + \beta = 90$

$A \hat{F} B \sim A \hat{D} H \xrightarrow{\text{وحد}} ! \text{نسبت به هم}$

$\frac{BF}{x} = \frac{2x}{DH} \longrightarrow BF = DH = y$
 $y^2 = 2x^2 \xrightarrow{\sqrt{\quad}} y = \sqrt{2}x$

$\Rightarrow AD = 2x$
 $AB = \sqrt{2}x$

$S_{ABCD} = \sqrt{2}x \cdot 2x = 2\sqrt{2}x^2 = 4\sqrt{2}x^2$
 $S_{AHD} = \frac{1}{2} \sqrt{2}x \cdot x = \frac{1}{2} \sqrt{2}x^2 \xrightarrow{\text{نسبت}} \frac{4\sqrt{2}x^2}{\frac{1}{2}\sqrt{2}x^2} = 8$



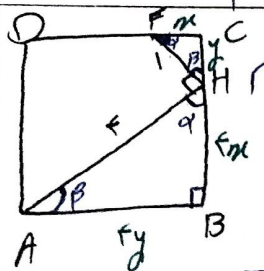
$id \rightarrow AB = \Delta y$

$\frac{\Delta h \cdot \Delta n}{2} = 45 \longrightarrow 2 \Delta n h = 90 \longrightarrow nh = \frac{45}{2}$

$S_{MBN} = \frac{2x \cdot \Delta h}{2} = 5 \longrightarrow n \cdot h = \frac{10}{2} = \frac{5}{1}$

$\Rightarrow 4 \cdot 0 = 2 \Delta \longrightarrow \Delta = \frac{2 \Delta}{9}$

$\frac{BM}{AM} = 8 \quad \left\{ \begin{array}{l} \Delta h = \frac{\epsilon \Delta}{9} \longrightarrow AB \\ \Delta h = \frac{\epsilon \Delta}{9} \longrightarrow BM \end{array} \right. \xrightarrow{\text{وحد}} \frac{\epsilon \Delta}{9} - \frac{2 \Delta}{9} = \frac{2 \Delta}{9} \longrightarrow AM \xrightarrow{\text{وحد}} \frac{BM}{AM} = \frac{\frac{2 \Delta}{9}}{\frac{2 \Delta}{9}} = \frac{2 \Delta}{2 \Delta} = 1$



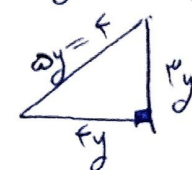
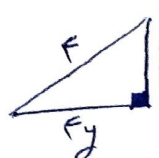
$ABH \sim FHC$

$\frac{ABH}{FCH} = f$

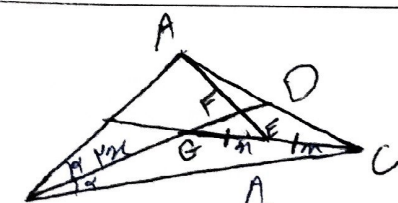
$y + \epsilon x = fy$

$\epsilon x = 2y$

$x = \frac{2}{\epsilon} y$



$S = (\epsilon y)^2 = 14y^2 = 14 \times \frac{\epsilon}{\Delta} = \frac{4 \epsilon}{\Delta} = \frac{14 \Delta}{10} = 14, 1 \Delta$



$GE = EC$

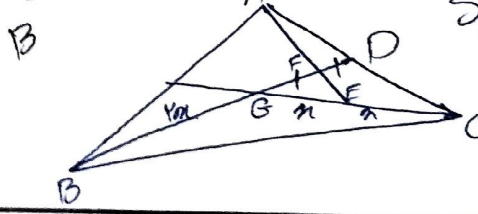
$\frac{BD}{FD} = 8$

$S_{ABD} = S_{BDC}$

$\frac{BG}{GD} = \frac{2x}{x} = \frac{2}{1}$

$FG = FD \longrightarrow y = \frac{x}{2}$

$\left\{ \begin{array}{l} FD = \frac{x}{2} \\ BD = 2x \end{array} \right. \longrightarrow \frac{BD}{FD} = \frac{2x}{\frac{x}{2}} = 4$



$\Rightarrow$ if $\begin{cases} ED = 2x \\ AE = x \end{cases} \rightarrow BC = 3x$
 $\begin{cases} BC \parallel AD \\ \alpha = \alpha' \\ B = \beta' \end{cases} \rightarrow \triangle BCF \sim \triangle AFE$ (نسبت متساوی)
 $\frac{BF}{EF} = \frac{FC}{AF} = \frac{3x}{x} = \frac{A_{BCF}}{A_{AFE}}$
 $\Rightarrow \begin{cases} EF = \frac{1}{3} \times \sqrt{10}x \\ AF = \frac{1}{3} \times \sqrt{2}x \end{cases} = \frac{\sqrt{10}}{3\sqrt{2}} = \frac{\sqrt{5}}{3}$
 $\Rightarrow \frac{EF}{AF} = ? \rightarrow \frac{\sqrt{10}x}{\sqrt{2}x} = \sqrt{5}$

$\begin{cases} \hat{A} = \hat{A} \\ \hat{E} = \hat{C} \end{cases} \rightarrow \triangle AED \sim \triangle ABC$ (نسبت متساوی)
 $\frac{ED}{BC} = \frac{AE}{AC} = \frac{1}{1+4} = \frac{1}{5} = \frac{A_{AED}}{A_{ABC}}$
 $\Rightarrow x(1+x) = 30 \rightarrow x^2 + x - 30 = 0 \rightarrow (x-5)(x+6) = 0$
 $\Rightarrow \begin{cases} x = 5 \text{ (✓)} \\ x = -6 \text{ (طول منفی)} \end{cases} \rightarrow \boxed{x = 5}$

$\triangle DEH \sim \triangle FHC \rightarrow \frac{x}{y} = \frac{2}{2} = 1$ (نسبت متساوی)
 $\Rightarrow \begin{cases} y = 2x \\ \frac{x}{y} = \frac{2}{2} \end{cases} \Rightarrow \triangle ADE \sim \triangle ABC$ (نسبت متساوی)
 $\frac{x}{3x} = \frac{2}{2+2} = \frac{1}{2} \rightarrow 2x = 2+2 \rightarrow 2x = 4 \rightarrow x = 2$
 $\Rightarrow \frac{x}{3x} = \frac{2}{2+2} = \frac{1}{2} \rightarrow 2x = 4 \rightarrow x = 2$
 $\Rightarrow \frac{x}{3x} = \frac{2}{2+2} = \frac{1}{2} \rightarrow 2x = 4 \rightarrow x = 2$

$\triangle AHC \sim \triangle AHB$ (زوايا متساوی)
 $\alpha + \beta = 90^\circ$
 $\frac{AB}{AC} = \frac{AH}{F} = \frac{14}{AH} \rightarrow AH^2 = F \times 14 \rightarrow AH = 2 \times F = 14$
 $\frac{AB}{AC} = \frac{AH=14}{F} = 2 \rightarrow AB = 2F = 14\sqrt{5}$
 $\Rightarrow \begin{cases} AB = 2F = 14\sqrt{5} \\ AC = F = 7\sqrt{5} \end{cases}$

$\triangle ABF \sim \triangle EFC$ (نسبت متساوی)
 $\frac{x}{4} = \frac{1}{1+x}$
 $\Rightarrow x^2 + 4x = 4 \rightarrow x^2 + 4x - 4 = 0 \rightarrow (x+12)(x-4) = 0 \rightarrow x = 4$
 $\Rightarrow AF = 1 + x = 1 + 4 = 5$