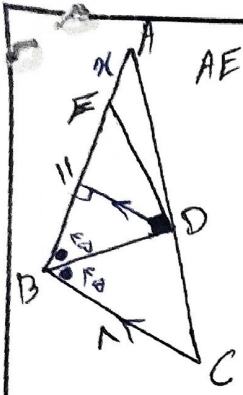


$AE=?$ $BH\parallel BC$ $\xrightarrow{\text{مورب } BD}$ $\hat{D}_1=\alpha \Rightarrow BH\hat{D}$

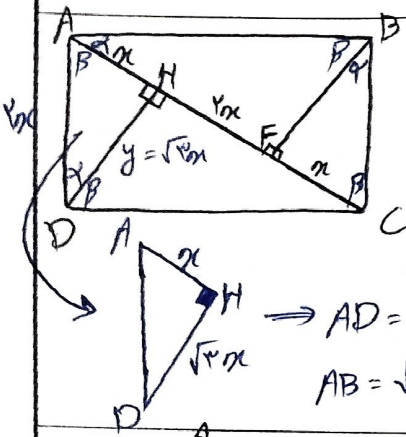
$\hat{D}_1=\hat{\alpha}=E_1=45$ $\Rightarrow x+x=2x=11$

$DH=BH=EH=x$

$BH\parallel BC \xrightarrow{\text{تالس}} \dfrac{AE+5/5}{AE+11}=\dfrac{5/5}{8}$

$8AE-5/5AE=\dfrac{121}{4}-44 \longrightarrow 2/5AE=14/5 \Rightarrow AE=\dfrac{14/5}{2/5}=5/6$ ✓

۲ / ۶



$\dfrac{S_{ABCD}}{S_{AHD}}=4$ $\longrightarrow \alpha+\beta=90$

$AFB\sim ADH$ $\xrightarrow{\text{تشابه}}$! همسوزایا برابر نه *

C نسبت تشابه $\longrightarrow \dfrac{BF}{x}=\dfrac{2x}{DH} \longrightarrow BF=DH=y$

$y^2=2x^2 \xrightarrow{\sqrt{}} y=\sqrt{2}x$

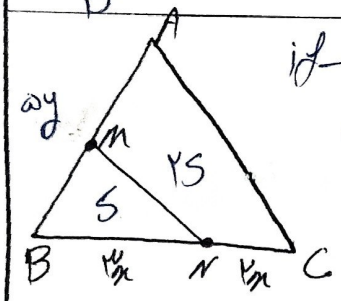
$AD=2x$

$AB=\sqrt{12}x$

$S_{ABCD}=\sqrt{12}x\cdot 2x=2\sqrt{2}\times 2x^2=4\sqrt{3}x^2$

$S_{AHD}=\frac{1}{2}\sqrt{2}x\cdot x=\frac{1}{2}\sqrt{2}x^2$ $\xrightarrow{\text{تقسیم}} \dfrac{4\sqrt{3}x^2}{\frac{1}{2}\sqrt{2}x^2}=8$ ✓

۲ / ۷



if $\longrightarrow AB=5y$

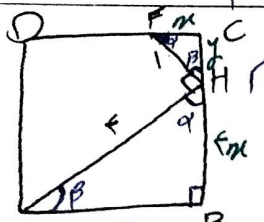
$\dfrac{5h\cdot 5x}{2}=45 \longrightarrow 25xh=45 \longrightarrow xh=\dfrac{45}{25}$

$S_{MBN}=\dfrac{3x\cdot 5h}{2}=5 \longrightarrow x\cdot h=\dfrac{45}{30}=\dfrac{3\cdot 45}{25}$

$\Rightarrow 90=25 \longrightarrow \bigcirc=\dfrac{25}{9}$

$\dfrac{BM}{AM}=?$ $\begin{cases} 5h=\dfrac{45}{9} \longrightarrow AB \longrightarrow \dfrac{45}{9}-\dfrac{25}{9}=\dfrac{20}{9} \longrightarrow AM \\ \dfrac{25}{9} \longrightarrow BM \end{cases}$ $\Rightarrow \dfrac{BM}{AM}=\dfrac{\frac{25}{9}}{\frac{20}{9}}=\dfrac{25}{20}=\dfrac{5}{4}$ ✓

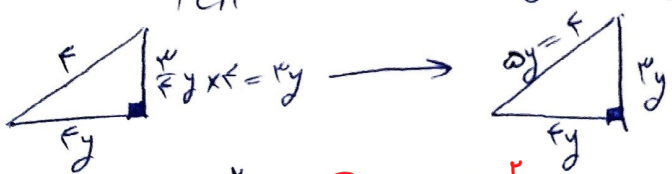
۲ / ۸



زوایای تیز $\longrightarrow ABH\sim FHC$

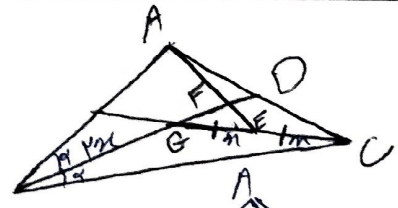
نسبت تشابه $\longrightarrow \dfrac{ABH}{FCH}=4$ $\longrightarrow y+4x=4y$

$4x=3y \longrightarrow \boxed{x=\frac{3}{4}y}$ ✓



$S=(4y)^2=14y^2=14\times\left(\frac{4}{5}\right)^2=\frac{64}{5}=\frac{128}{10}=$ ~~۱۲۸~~ $\dfrac{64}{25}$

۱/۲۵ / ۹



$GE=EC$

$\dfrac{BD}{FD}=?$

$S_{ABD}=S_{BDC}$

* خاصیت مرکز ثقل $\longleftarrow$ محل برخورد ۳ میانه است.

$\longleftarrow$ محل برخورد میانه‌ها است.

* میانه‌ها در مثلث همدیگر را به نسبت ۱ به ۲ قطع می‌کنند

$\dfrac{BG}{GD}=\dfrac{2x}{x}=\dfrac{2}{1}$ ✓

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

$\begin{cases} FD=\dfrac{x}{2}=\dfrac{3}{4} \\ BD=3x \end{cases} \longrightarrow \dfrac{BD}{FD}=\dfrac{3x}{\frac{3}{4}}=4$

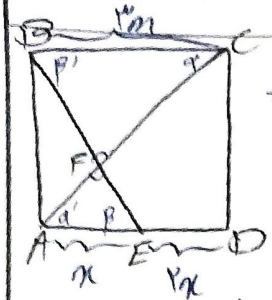
۲/۵ / ۱۰

توضیحات صفحه آخر

نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ..... کلاس .....

۱۹,۲۵

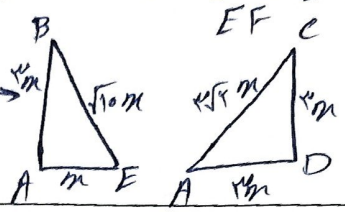
۲ ۱



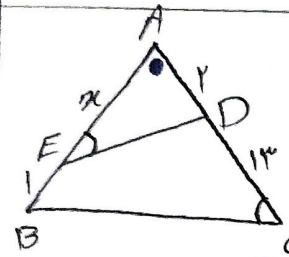
$\Rightarrow$ if $\begin{cases} ED = 2x \\ AE = x \end{cases} \rightarrow BC = 3x$

$\begin{cases} BC \parallel AD \\ \alpha = \alpha' \\ \beta = \beta' \end{cases} \rightarrow \hat{BCF} \sim \hat{AFE}$ نسبت تشابه $\rightarrow \frac{BF}{EF} = \frac{FC}{AF} = \frac{3x}{x}$ $\hat{BCF} \sim \hat{AFE}$

$\Rightarrow \begin{cases} EF = \frac{1}{10} \times \sqrt{10}x \\ AF = \frac{1}{10} \times 3\sqrt{2}x \end{cases} \rightarrow \frac{EF}{AF} = \frac{\sqrt{10}}{3\sqrt{2}} = \frac{\sqrt{5}}{3}$ ✓ $\rightarrow \frac{EF}{AF} = ?$



۲ ۲

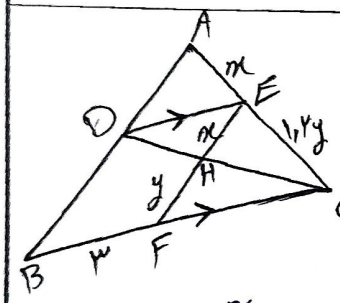


$\begin{cases} \hat{A} = \hat{A} \\ \hat{E} = \hat{C} \end{cases}$ تشابه $\rightarrow AED \sim ABC$ نسبت تشابه $\rightarrow \frac{E,C}{2} = \frac{A}{ED} = \frac{x}{15}$ $AED \sim ABC$

$\Rightarrow$ طرفین وسطین $\rightarrow x(1+x) = 30 \rightarrow x^2 + x - 30 = 0 \rightarrow (x-5)(x+6) = 0$ $\begin{cases} x = 5 \\ x = -6 \end{cases}$

$\begin{cases} x = 5 \text{ (✓)} \\ x = -6 \times \text{غ ق ق} \end{cases} \rightarrow$ طول منفی $\rightarrow x = 5$ ✓

۲ ۳



$DEH \sim FHC \rightarrow \frac{x}{y} = \frac{3}{5}$ نسبت تشابه $\rightarrow \begin{cases} DE = 2z \\ FC = 5z \end{cases}$

$\begin{cases} 3y = 5x \\ \frac{x}{y} = \frac{3}{5} \end{cases} \Rightarrow \begin{cases} ADE \sim ABC \end{cases}$

$\rightarrow$ نسبت تشابه $= \frac{x}{x+1.2y} = \frac{2z}{5z+3}$

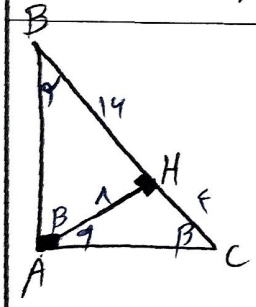
$\Rightarrow \frac{x}{3x} = \frac{2z}{5z+3} = \frac{1}{3}$ طرفین وسطین $\rightarrow 9z = 5z + 3$

$4z = 3 \rightarrow z = \frac{3}{4}$

$BC = 5z + 3 = 5 \times \frac{3}{4} + 3$

$\frac{15}{4} + 3 = \frac{27}{4} = 6.75$ ✓

۲ ۴



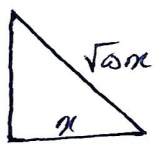
$AHC \sim AHB \rightarrow$ زوایای برابر

$\alpha + \beta = 90°$

$\rightarrow$ نسبت تشابه $\rightarrow \frac{AB}{AC} = \frac{AH}{4} = \frac{14}{AH} \rightarrow AH^2 = 4 \times 14 \xrightarrow{\sqrt{}} AH = 2 \times 4 = 8$

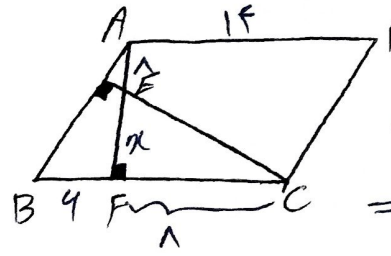
$\rightarrow \frac{AB}{AC} = \frac{AH=8}{4} = 2$ ✓

$\Rightarrow$



$\sqrt{5}x = 20 \rightarrow x = 4\sqrt{5} \Rightarrow \begin{cases} AB = 2x = 8\sqrt{5} \\ AC = x = 4\sqrt{5} \end{cases}$ ✓

۲ ۵



$AF = ?$

$ABF \sim EFC \xrightarrow{ii}$ if $EF = x \Rightarrow$ نسبت تشابه $\frac{x}{4} = \frac{8}{8+x}$

$\Rightarrow x^2 + 8x = 48 \rightarrow x^2 + 8x - 48 = 0$

$(x+12)(x-4) = 0 \rightarrow x < 4$ (✓) ✓ $\rightarrow -12 \times$ غ ق ق

$AF = 8 + x = 8 + 4 = 12$ ✓

۱۵- محل برخورد میانه‌ها G $\rightarrow$ $BG = ۲m$ $GD = m$ $BD = ۳m$

از A به G وصل کنیم، AE ، GD میانه‌های مثلث AGC می‌شوند:

$$GF = \frac{۲}{۳}m$$
$$FD = \frac{۱}{۳}m$$
$$\Rightarrow \frac{BD}{FD} = \frac{۳m}{\frac{۱}{۳}m} = \boxed{۹}$$