نام و نام خانوادگی ...ابوالفضل ابوالحاضلی... پاسخنامه تشریحی تکلیف شماره ...۲۱... کلاس ...یازدهم...

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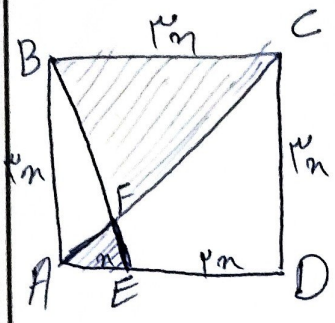

$BCF \sim AEF \Rightarrow \frac{AF}{FC} = \frac{FE}{FB} = \frac{AE}{BC} \to n, 3n$

$AC = \sqrt{(3n)^2 + (3n)^2} = \sqrt{18}\, n \Rightarrow AF = \frac{\sqrt{18}}{4}$

$BE = \sqrt{(3n)^2 + n^2} = \sqrt{10}\, n \Rightarrow EF = \frac{\sqrt{10}}{4}$

$\Rightarrow \frac{EF}{AF} = \frac{\frac{\sqrt{10}}{4}}{\frac{\sqrt{18}}{4}} = \frac{\sqrt{10}}{\sqrt{18}} = \frac{\sqrt{10}}{3\sqrt{2}} = \frac{\sqrt{20}}{6} = \frac{2\sqrt{5}}{6}$ ✓

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$\hat{E} = \hat{C}$
$A = A$ (مشترک)
$B = D$

$\Rightarrow ADE \sim ABC \Rightarrow \frac{AD}{AB} = \frac{AE}{AC} \Rightarrow \frac{2}{n+1} = \frac{n}{12}$

$\Rightarrow n^2 + n = 20 \Rightarrow n^2 + n - 20 = 0 \Rightarrow (n+5)(n-4) = 0$

$n = 4$ ✓
$n = -5$ غ ق ق

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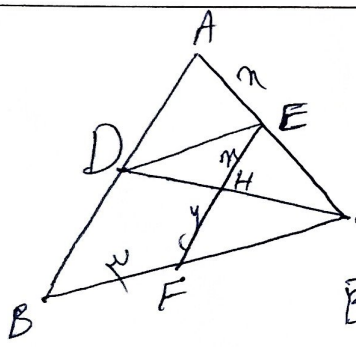

$ADE \sim ABC \to \frac{n}{n+EC} = \frac{DE}{FC+2} \to \begin{cases} DE = 3 \\ FC = 6 \end{cases}$

$\frac{1}{2}\frac{n}{2n} = \frac{3}{6+2} \Rightarrow 8 = 6 + 2 \to 2 = \frac{3}{4}$

$BC = 6 + 2 \to 6 \times \frac{3}{4} + 2 = 6.5$ ✓

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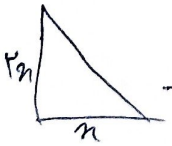
$AHC \sim AHB \to \frac{AB}{AC} = \frac{AH}{4} = \frac{14}{AH} \to AH^2 = 4 \times 14 \to AH = 8$

$\frac{AB}{AC} = 2$ ✓



$\Rightarrow (2n)^2 + n^2 = \sqrt{7}\, n \Rightarrow \sqrt{7}\, n = 20 \to n = 4\sqrt{7}$

$\Rightarrow \begin{cases} AB = 8\sqrt{7} \\ AC = 4\sqrt{7} \end{cases}$ ✓

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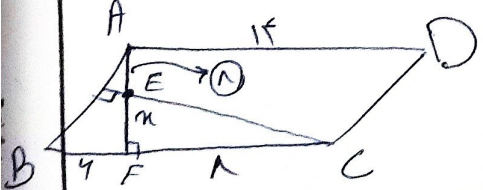
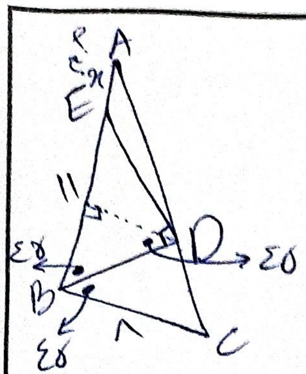


$ABF \sim EFC \Rightarrow \frac{n}{4} = \frac{8}{n+8} \to n^2 + 8n = 32$

$\to n^2 + 8n - 48 = 0 \to (n+12)(n-4) = 0 \to \begin{cases} n = -12 \text{ غ ق ق} \\ n = 4 \end{cases}$ ✓

$\Rightarrow AF = 8 + 4 = 12$ ✓



$BH \parallel BC \xrightarrow{\text{مورب } BD} D_1 = \alpha = ۴۵^\circ$

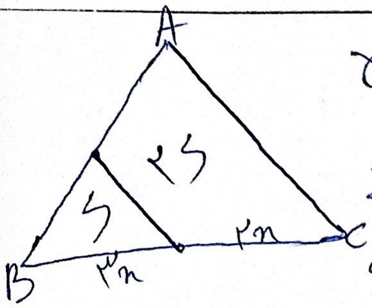
$BH \parallel BC \longrightarrow \frac{AE + ۵,۵}{AE + 11} = \frac{۵,۵}{۸}$ (۲)

$۸AE - ۵,۵AE = \frac{۱۲۱}{۲} - ۴۴ \longrightarrow ۲,۵AE = ۱۶,۵ \longrightarrow AE = ۶,۶$ ۶

$AFB \sim ADH \longrightarrow \frac{BF}{x} = \frac{۳x}{DH} \longrightarrow BF = DH$ (۲)

$\Longrightarrow BF^۲ = ۳x^۲ \longrightarrow BF = DH = \sqrt{۳}\,x$ ۷

$\Longrightarrow \begin{cases} S_{ABCD} = (\sqrt{۱۲}\,x) \times (۲x) = (۲\sqrt{۳})(۲x^۲) = ۴\sqrt{۳}\,x^۲ \\ S_{AHD} = \frac{۱}{۲}\sqrt{۳}\,x\,(x) = \frac{۱}{۲}\sqrt{۳}\,x^۲ \end{cases} \Longrightarrow$ ۸ برابر

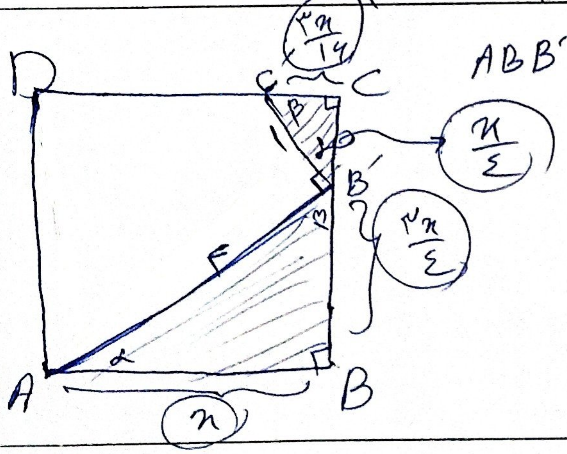


$\frac{۵h \cdot ۵x}{۲} = ۳S \longrightarrow ۲۵x.h = ۶S \longrightarrow x.h = \frac{۶S}{۲۵}$ (۲)

$S_{MBN} = \frac{۳x.y}{۲} = S \longrightarrow x.h = \frac{۲S}{۳y}$ ۸

$۹xy = ۲۵ \longrightarrow y = \frac{۲۵}{۹}$

$\begin{cases} ۵h = \frac{۴۵}{۹} \\ BM = \frac{۲۵}{۹} \end{cases} \longrightarrow AB \longrightarrow \frac{۴۵}{۹} - \frac{۲۵}{۹} = \frac{۲۰}{۹}\,AM \qquad \frac{BM}{AM} = \frac{\frac{۲۵}{۹}}{\frac{۲۰}{۹}} = \frac{۵}{۴}$



$ABB' \sim B'CC' \longrightarrow \frac{B'C'}{AB'} = \frac{CC'}{BB'} = \frac{CB'}{AB} = \frac{۱}{۴}$ (۲)

$x^۲ + \frac{۹}{۱۶}x^۲ = ۱۶ \longrightarrow \frac{۲۵}{۱۶}x^۲ = ۱۶ \longrightarrow x^۲ = \frac{۱۶ \times ۱۶}{۲۵}$ ۹

$\longrightarrow x = \frac{۱۶}{۵} \Longrightarrow S = x^۲ = ۱۰,۲۴$

از A به G وصل کنیم، AE و GD میانه‌ها هستند AGC می‌شوند: (۱)

$\frac{BG}{GD} = \frac{۲x}{x} = ۲$ ~~$FG = FD$~~ $\longrightarrow y = \frac{x}{۲}$ $GF = \frac{۲}{۳}x$ $FD = \frac{۱}{۳}x$ $\longrightarrow \frac{BD}{FD} = \frac{۳x}{\frac{۱}{۳}x} = ۹$

$\begin{cases} FD = \frac{x}{۲} \\ BD = ۳x \end{cases} \longrightarrow \frac{BD}{FD} = \frac{۳x}{\frac{x}{۲}} = ۶$ ۱۰