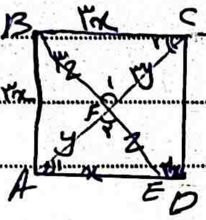
نام و نام خانوادگی: زهراسادات حسینی   تکلیف شماره: ۲۱   کلاس یازدهم B دختر



(۱)
$\hat F_1 = \hat F_2$ ، $\hat C_1 = \hat A_1$ } $\overset{\triangle}{BFC} \sim \overset{\triangle}{AFE} \to \frac{BC}{AE} = 3 = \frac{BF}{FE} = \frac{CF}{AF}$ ، $\frac{EF}{AF} = \frac{\frac{\sqrt{10}}{4}}{\frac{3\sqrt2}{4}} = \frac{\sqrt5}{3}$

$\overset{\triangle}{ABE}$ فیثاغورس در: $(4z)^2 = x^2 + (3x)^2 \to z = \frac{\sqrt{10}\,x}{4} = EF$

ABC فیثاغورس در: $(4y)^2 = (3x)^2 + (3x)^2 \to y = \frac{3\sqrt2}{4}x$] $= AF$

(۲)
$\hat A = \hat A$ مشترک ، $\hat E = \hat C$ } $\overset{\triangle}{ADE} \sim \overset{\triangle}{ABC} \to \frac{2}{1+x} = \frac{x}{15} \to 30 = x + x^2 \to x^2 + x - 30 = 0 \to (x+6)(x-5) = 0$

$x = -6$ غ ق ق ، $x = 5$ ق ق

$x = 5$

(۳)
$\frac{x}{x+1/2y} = \frac{DE}{BC} = \frac{0/6y}{1/8y} = \frac{1}{3}$ ، $x = 0/6y$

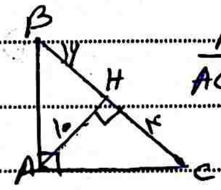
$\overset{\triangle}{DHE} \sim \overset{\triangle}{FHC}$

$\frac{x}{y} = \frac{0/6y}{y} = 0/6 = \frac{DE}{FC} \to DE = 0/6FC \, , \, DE = \frac{BC}{3} \to 0/6FC = \frac{1}{3}BC \to BC = 1/8FC$

$BC - FC = BF \to 1/8FC - FC = 3 \to 0/8FC = 3 \to FC = \frac{3 \times 10}{8} = \frac{15}{4}$

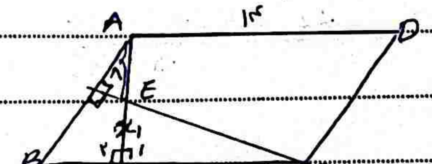
$BC = FC + BF$
$BC = \frac{15}{4} + 3 = 6/75$

(۴)



$\frac{AB^2}{AC^2} = \frac{16 \times 20}{4 \times 20} \Rightarrow \frac{AB}{AC} = \frac{4\sqrt{20}}{2\sqrt{20}} = 2$

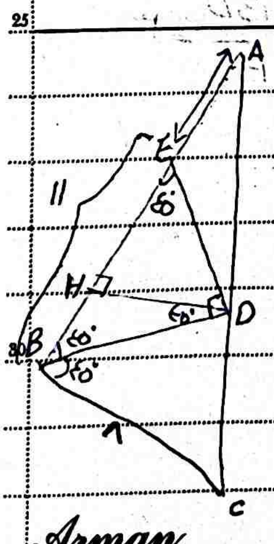
(۵)



$F_1 = F_2 = 90° \to \overset{\triangle}{ABF} \sim \overset{\triangle}{CEF} \to \frac{x}{4} = \frac{8}{8+x} \to x = 4$ ق ق ، -12 غ ق ق

$AF = 4 + 8 = 12$

(۶)



$OH \parallel BC \to \hat B = 90°$

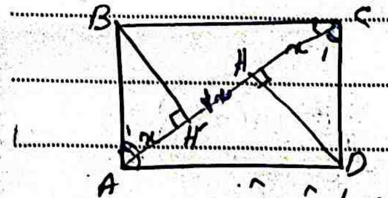
$DH \parallel BC$ و BD نیمساز $\to \overset{\triangle}{BHD}$ متساوی‌الساقین ، نیمساز $\Rightarrow HD$ ارتفاع و میانه و نیمساز $\to x = \frac{11}{2}$

تالس $\to \frac{AH}{HB} = \frac{HD}{BC} \Rightarrow \frac{5/5 + AE}{11 + AE} = \frac{5/5}{8} \to AE = ۶۶$

Arman

$$\frac{S_{\square}}{S_{CHD}} = \frac{2 \times S_{CDA}}{S_{CHD}} = \frac{2 \times 4x \times HD \times \frac{1}{2}}{DH \times x \times \frac{1}{2}} = 8$$

(۷)



$\hat{H} = \hat{H'} = 90°$

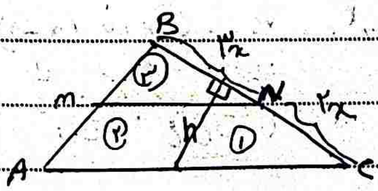
$AH' = HC = x$

$\hat{A}_1 = \hat{C}_1$ طبق خطوط موازی

$\Rightarrow \overset{\triangle}{AH'B} \cong \overset{\triangle}{DHC} \to HD = BH$

---

(۸)



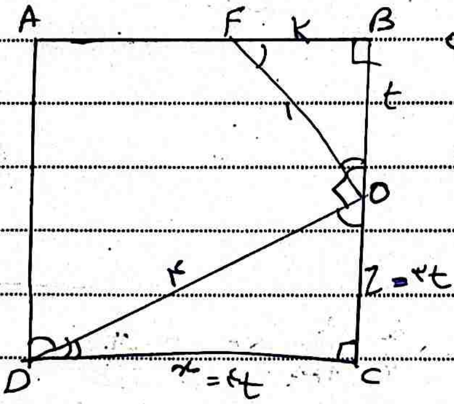
$BN = \frac{3}{2} NC \quad , \quad S_{ABC} = 3 S_{BMN}$

$$\frac{S_{BMN}}{S_{ABC}} = \frac{BM \times BN}{BA \times BC} = \frac{BM}{BA} \times \frac{3}{5} = \frac{1}{3}$$

$$\frac{BM}{AB} = \frac{5}{9} \to \frac{BM}{AM} = \frac{5}{4}$$

---

(۹)



طبق شکل $\overset{\triangle}{OBF} \sim \overset{\triangle}{OCD} \to \frac{4}{1} = \frac{x}{t} = \frac{z}{k}$ ($x \to 4t$, $z \to 4k$)

$4k + t = x = 4t \Rightarrow 4k = 3t = z$

$\overset{\triangle}{OCD}$ فیثاغورث $\to (3t)^2 + (4t)^2 = (5t)^2$

$t = \frac{4}{5} \leftarrow 4 = 5t$

$S_{\text{مربع}} = x^2 = \frac{16}{5} \times \frac{16}{5} = \frac{256}{25}$; $x = 4t = 4 \times \frac{4}{5} = \frac{16}{5}$

$BD \to$ میانه / میانه‌ها به نسبت ۱ به ۲ تقسیم می‌کنند

$CO \to$ میانه

$GD \to$ میانه / $EG = EC \to AE$ میانه

$\Rightarrow GB = 6x$, $BD = x$, $GF = 2x$

$$\frac{BD}{FD} = \frac{6x + 2x + x}{x} = 9$$