

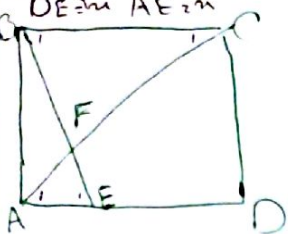
18

سری ۲۱

پایه ۴

علیرضا موسوی

$DE = 2AE$
 $DE = m \quad AE = m$

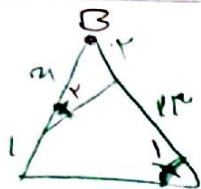


$\hat{A}_1 = \hat{C}_1$
 $\hat{B}_1 = \hat{E}_1$
 $\hat{F} = \hat{F}$

$\therefore BFC \sim EFA \rightarrow \frac{BC}{AE} = \frac{CF}{AF} = \frac{BF}{EF} = \frac{m}{m} = 1$
 $\rightarrow \frac{AF}{AF+CF} = \frac{AF}{AC} = \frac{1}{2}$

$\rightarrow AF = \frac{1}{2} AC = \frac{m\sqrt{2}}{2} \quad EF = \frac{1}{2} BE = \frac{\sqrt{10}}{2} m$

$FE = AF$ ؟ $\rightarrow \frac{FE}{AF} = ? \quad \frac{EF}{AF} = \frac{\frac{\sqrt{10}}{2} m}{\frac{m\sqrt{2}}{2}} = \frac{\sqrt{10}}{\sqrt{2}} = \frac{\sqrt{20}}{2} = \frac{\sqrt{5}}{1}$

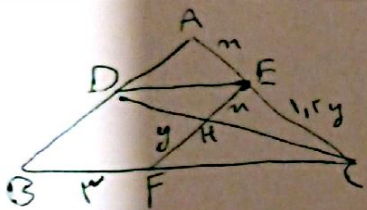


$\hat{B} = \hat{B} \quad \hat{C} = \hat{C} \quad \therefore \triangle BDE \sim \triangle BAC$
 $\rightarrow \frac{DE}{BC} = \frac{m}{2m} = \frac{1}{2}$

$\rightarrow m^2 + m = 2 \quad m^2 + m - 2 = 0$

$\rightarrow m = 1$ (چون $m = -2$ غلط است)

$m = 1 \quad m = 2$ ✓



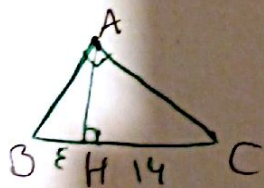
$\frac{DE}{FC} = \frac{m}{y} \quad \frac{DE}{FC+2} = \frac{m}{m+1+y}$

$BC \parallel DE \rightarrow y = m \quad 1+y = 2m \quad y = \frac{2}{3}m$

$\frac{FC+2}{FC} = \frac{m+1+y}{y} = \frac{m+2m}{\frac{2}{3}m} = \frac{3}{\frac{2}{3}} = \frac{9}{2}$

$BC = ? = FC + 2 = \frac{10}{2} + 2 = \frac{16}{2} = 8$ ✓

$\rightarrow 5FC + 10 = 9FC \rightarrow FC = \frac{10}{4}$

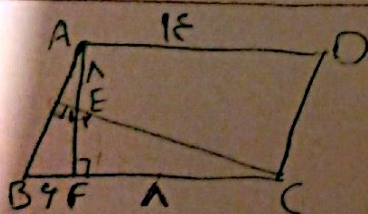


$AH^2 = BH \times CH$

$\sqrt{BH^2 + AH^2} = \epsilon \sqrt{5} \quad \sqrt{CH^2 + AH^2} = \lambda \sqrt{5}$

$AH^2 = \epsilon \times 14 \rightarrow AH = \sqrt{14}$

نسبت؟ $\frac{\sqrt{5}}{\epsilon \sqrt{5}} = 2$ ✓ البقیه بآسان به خط کرد



$B + E_1 = 180 \quad E_1 + E_2 = 180 \quad \therefore B = E_2$
 $\therefore BFA \sim EFC$

$\frac{4}{EF} = \frac{EF+1}{1}$

$AF = ? \quad 1 + EF = 1 + \epsilon \sqrt{14}$ ✓

$\rightarrow EF^2 + 1 - EF - \epsilon \sqrt{14} = 0$

$EF = \frac{1}{2}$ ✓



$$\left. \begin{array}{l} 2 \text{ خط } \rightarrow D_1 = B_1 \\ BD \text{ خط } \rightarrow B_2 = B_1 \end{array} \right\} \hat{B}_1 \hat{D}_1 \Rightarrow \hat{D} \Rightarrow DH = BH = \frac{11}{2} = 5.5 \quad (2)$$

$$\rightarrow ABC \sim AHD \rightarrow \frac{5.5}{1} = \frac{AE + 5.5}{AE + 11} \rightarrow 5.5 AE = 14.5$$

مسئله ۱۰۰
DO خط

$$AE = ? \quad \frac{14.5}{5.5} = \frac{29}{11} = 2.63 \checkmark$$



$$AH = m \quad \text{مسئله ۱۰۰} : BH' = CH' = AH' \rightarrow BH' = \sqrt{5} m$$

$$S_{BH'E} = \frac{\sqrt{5} m^2}{2}$$

$$\rightarrow BC = 2m$$

$$(2m)^2 + AB^2 = (\sqrt{5} m)^2$$

$$AB = \sqrt{5} m \rightarrow S_{\square} = \sqrt{5} m^2$$

$$EH' = \frac{\sqrt{5} m}{2}, S_{CEH'} = \frac{\sqrt{5} m^2}{4}$$

این قسمت باقی بماند و توضیحات سوال اصلاً تشکیل نمیشد!

$S_{\text{مستطیل}}$
 $S_{\Delta \text{مستطیل}}$

$$\begin{aligned} \text{نسبت } CH'E &\rightarrow \text{نسبت} = \frac{4\sqrt{5} m^2}{m^2} = 4\sqrt{5} \\ \text{نسبت } CBH' &\rightarrow \text{نسبت} = \frac{4\sqrt{5} m^2}{m^2} = 4\sqrt{5} \end{aligned}$$



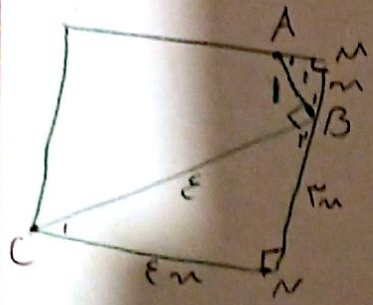
$$\frac{S_{ABC}}{S_{BMN}} = \frac{\frac{1}{2} \sin \alpha \cdot BC \cdot AB}{\frac{1}{2} \sin \alpha \cdot BN \cdot BM} = 4 \Rightarrow \frac{BC}{BN} \times \frac{AB}{BM} = 4$$

$$\frac{BN + NC}{BN} = \frac{5}{2}$$

$$\rightarrow \frac{AB}{BM} = \frac{9}{5} \rightarrow AB = 9a, BM = 5a, AM = 4a$$

$$\frac{S_{ABC}}{S_{BMN}} = 4$$

$$\frac{BM}{AM} = ? \quad \frac{5a}{4a} = \frac{5}{4} \checkmark$$

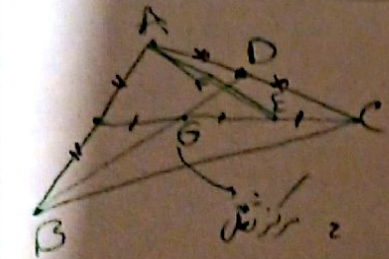


$$\left. \begin{array}{l} A_1 + B_1 = 90 \\ B_1 + B_2 = 90 \end{array} \right\} \left. \begin{array}{l} A_1 = B_2 \\ \hat{M} = \hat{N} = 90 \end{array} \right\} \Delta AMB \sim \Delta BNC$$

$$\frac{AB}{BC} = \frac{BM}{CN} = \frac{1}{\epsilon}$$

$$\rightarrow (CN) \epsilon = \epsilon BM$$

$$\text{مسئله ۱۰۰} : \epsilon m, \epsilon m = \frac{254}{25} = 10.16 \checkmark \quad \epsilon m = \frac{14}{5}$$



$$G \rightarrow BG = 2m, GD = m \rightarrow BD = 3m$$

از A به B وصل کنیم، AE، GD، AGC مثلث متشکله:

$$GF = \frac{2}{3} m \rightarrow \frac{BD}{FD} = \frac{3}{\frac{2}{3} m} = \frac{9}{2}$$

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