

نام و نام خانوادگی ..... پاسبان تشریحی تکلیف شماره ۲۰۰ کلاس ..... پاسنامه

$$\frac{ED}{AE} = 2 \quad BC \parallel AE \rightarrow \left. \begin{array}{l} \hat{B}_1 = \hat{E}_1 \\ \hat{F}_1 = \hat{F}_2 \end{array} \right\} \text{نیز } \triangle AEF \sim \triangle BCF$$

$$\rightarrow \frac{AE}{BC} = \frac{AF}{CF} = \frac{EF}{BF} \rightarrow \frac{y}{3m} = \frac{2}{CF} = \frac{y}{3y} \rightarrow BF = 3y \quad CF = 3(2-y)$$

$$\triangle AEF \sim \triangle BCF \Rightarrow (3m)^2 + y^2 = (3y+2)^2 \rightarrow 9m^2 + y^2 = 9y^2 + 12y + 4 \rightarrow y = \frac{\sqrt{10}}{2}m$$

$$\triangle ACD \sim \triangle BCF \Rightarrow (3m)^2 + (3m)^2 = (3x+2)^2 \rightarrow 18m^2 = 9x^2 + 12x + 4 \rightarrow x = \frac{\sqrt{10}}{2}m = \frac{\sqrt{10}}{2}y$$

$$\frac{AF}{AE} = \frac{y}{2} = \frac{\frac{\sqrt{10}}{2}m}{\frac{\sqrt{10}}{2}y} = \frac{\sqrt{10}}{3}$$

$\left. \begin{array}{l} \hat{A} = \hat{A} \\ \hat{AED} = \hat{ACB} \end{array} \right\} \text{نیز } \triangle ADE \sim \triangle ACB \rightarrow \frac{AD}{AB} = \frac{AE}{AC} = \frac{ED}{BC}$ 

$$\Rightarrow \frac{y}{m+4} = \frac{m}{15} \rightarrow m^2 + m = 30 \rightarrow m^2 + m - 30 = 0 \rightarrow (m-5)(m+6) = 0$$

$$\rightarrow m = 5 \text{ (قبول)} \\ m = -6 \text{ (رد)}$$

$$DE \parallel BC \rightarrow \frac{AD}{DB} = \frac{AE}{EC} = \frac{DE}{BC} \rightarrow \frac{m}{4} = \frac{y}{2} = \frac{3/2}{5}$$

$$\Rightarrow y = 2m \rightarrow m = \frac{y}{2} \quad \text{نیز } \frac{DE}{BC} = \frac{y}{5} \rightarrow \frac{3/2}{5} = \frac{y}{5} \rightarrow y = 3/2$$

$$\text{نیز } \frac{AE}{AC} = \frac{DE}{BC} \rightarrow \frac{y}{m+4} = \frac{3/2}{5} \rightarrow \frac{y}{m+4} = \frac{3}{10} \rightarrow 10y = 3m + 12 \rightarrow 10 \cdot \frac{y}{2} = 3m + 12 \rightarrow 5y = 3m + 12$$

$$AC = AE + EC = m + 1/2y = m + 1/2 \cdot \frac{3m}{5} = m + \frac{3m}{10} = \frac{13m}{10}$$

$$\Rightarrow \frac{13m}{10} = \frac{10}{5} \rightarrow m = \frac{10}{13}$$

$$BC = BH + HC \rightarrow CH = 1$$

$$AC^2 = HC \cdot BC \rightarrow AC^2 = 1 \cdot 5 \rightarrow AC = \sqrt{5}$$

$$AB^2 = BH \cdot BC \rightarrow AB^2 = 4 \cdot 5 \rightarrow AB = 2\sqrt{5}$$

$$\frac{AC}{AB} = \frac{\sqrt{5}}{2\sqrt{5}} = \frac{1}{2}$$

$$\left. \begin{array}{l} \hat{F}_1 = \hat{F}_2 = 90^\circ \\ \hat{B}_1 = \hat{B}_2 \\ \hat{A}_1 + \hat{B}_1 = 90^\circ \\ \hat{C}_1 + \hat{B}_2 = 90^\circ \end{array} \right\} \hat{A}_1 = \hat{C}_1$$

$$\text{نیز } \triangle AEF \sim \triangle EFC \rightarrow \frac{CF}{AF} = \frac{EF}{BF} = \frac{CE}{AE}$$

$$\Rightarrow \frac{1}{1} = \frac{EF}{1} = \frac{CE}{1} \rightarrow EF = 1, CE = 1$$

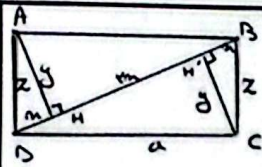
$$EF = t \Rightarrow t^2 + 1t - 1 = 0 \rightarrow (t+1)(t-1) = 0 \rightarrow t = 1 \text{ (قبول)}$$

$$AF = EA + EF = 1 + 1 = 2$$

$$\frac{AE}{AC} = \frac{AD}{AB} = \frac{DE}{BC} \rightarrow \frac{1}{3} = \frac{2}{4} = \frac{2}{BC} \rightarrow BC = 3$$

$\triangle DHE \sim \triangle CHF \rightarrow \frac{EH}{FH} = \frac{DH}{CH} = \frac{DE}{CF} \rightarrow \frac{1}{2} = \frac{2}{CF} \rightarrow CF = 4$ 

$$\text{نیز } BC = BF + CF \rightarrow DE = \frac{1}{2} \quad BC = 1 \times \frac{1}{2} = \frac{1}{2}$$



$$y^2 = x \times m = m^2 \rightarrow y = \sqrt{m}$$

$$z^2 = y^2 + m^2 + m^2 + m^2 \rightarrow z = 2m$$

$$a^2 = \frac{(AB)^2}{(m)^2} = \frac{BC^2}{(m)^2} = \frac{14m^2 + m^2 + 12m^2}{(m)^2} \rightarrow a = 2\sqrt{m}$$

$$S_{ADH} = \frac{xy}{2} = \frac{m\sqrt{m}}{2} = \frac{\sqrt{m}}{2} m^2$$

$$S_{\text{مربع}} = AB \times BC = a \times z = 2\sqrt{m} \times 2m = 4\sqrt{m} m^2$$

$$\frac{S_{\text{مربع}}}{S_{ADH}} = \frac{4\sqrt{m} m^2}{\frac{\sqrt{m}}{2} m^2} = 8$$



$$BD \parallel AC \rightarrow \hat{B}_1 = \hat{B}_2$$

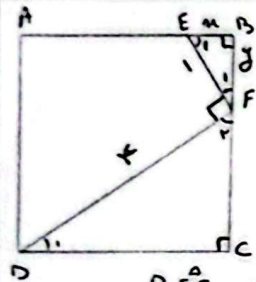
$$\hat{B}_1 = \hat{B}_2 \rightarrow \text{مستقيم}$$

$$HD \parallel BC \rightarrow \hat{H} = \hat{B} = 90^\circ \rightarrow \hat{B}_1 = \hat{B}_2 = \hat{D}_1 = 90^\circ = 90^\circ$$

$$\hat{B}_2 + \hat{E}_1 = 90^\circ \rightarrow \hat{E}_1 = 90^\circ \rightarrow EBD \text{ مثلث قائم الزاوية } \rightarrow EH = BH = \frac{11}{2} = HD$$

$$AB \parallel DC \rightarrow \frac{AH}{AB} = \frac{HD}{BC} \rightarrow \frac{AE + \frac{11}{2}}{AE + 11} = \frac{\frac{11}{2}}{11} \rightarrow \frac{2AE + 11}{2AE + 22} = \frac{1}{2}$$

$$\rightarrow 4AE + 11 = 11AE + 22 \rightarrow 4AE = 11 \rightarrow AE = \frac{11}{5} = 2.2$$



$$\hat{B} = \hat{C} = 90^\circ$$

$$\hat{F}_1 + \hat{F}_2 = 90^\circ$$

$$\hat{E}_1 + \hat{F}_1 = 90^\circ$$

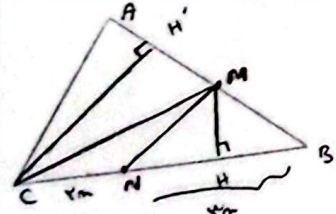
$$\hat{E}_1 = \hat{F}_2$$

$$\rightarrow \frac{1}{x} = \frac{m}{FC} = \frac{y}{DC} \rightarrow FC = \frac{m}{x}$$

$$BF + FC = DC \rightarrow m + y = y \rightarrow m = y$$

$$BEF \text{ مثلث قائم الزاوية } : m^2 + y^2 = 1 \rightarrow \frac{1}{x^2} y^2 + y^2 = 1 \rightarrow \frac{y^2}{x^2} + y^2 = 1 \rightarrow y = \frac{x}{2}$$

$$S = \left(\frac{14}{5}\right)^2 = \frac{196}{25}$$



$$\frac{BN}{NC} = \frac{m}{y}$$

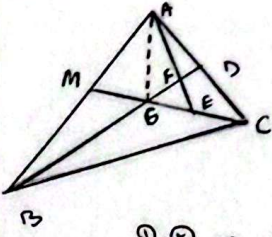
$$m \rightarrow h_{MNB}, h_{MCB} \rightarrow \frac{S_{MNB}}{S_{MCB}} = \frac{\frac{1}{2} \times MN \times BN}{\frac{1}{2} \times MN \times CB} = \frac{BN}{CB}$$

$$\rightarrow \frac{m}{am} = \frac{m}{a}$$

$$S_{MBC} = am$$

$$\rightarrow S_{AMC} + am = am \rightarrow S_{AMC} = 0$$

$$CH = h_{CMN} + h_{CBM} \rightarrow \frac{S_{CMN}}{S_{MCD}} = \frac{\frac{1}{2} \times CH \times AM}{\frac{1}{2} \times CH \times MB} = \frac{AM}{BM} \Rightarrow \frac{m}{am} = \frac{am}{bm} \rightarrow \frac{bm}{am} = \frac{a}{b}$$



$$\frac{DG}{BD} = \frac{1}{2} \quad (1)$$

$$AG \rightarrow : AE \cdot GD \rightarrow \frac{FD}{GD} = \frac{1}{2} \quad (2)$$

$$(1) \cdot (2) \rightarrow \frac{DG}{BD} \times \frac{FD}{GD} = \frac{1}{2} \times \frac{1}{2} \rightarrow \frac{FD}{BD} = \frac{1}{4} \rightarrow \frac{BD}{DF} = 4$$