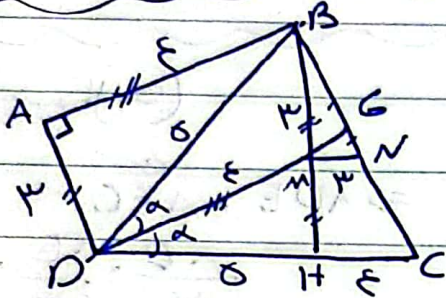


$$\frac{S_{BCE}}{S_{BDE}} = \frac{BC}{DE}$$

$$\frac{AD}{AB} = \frac{DE}{BC} = \frac{1}{2} \rightarrow \frac{DE}{BC}$$

$$\frac{BC}{DE} = \frac{1}{\frac{1}{2}} = 2 \quad \boxed{2 \text{ یا } 2 \text{ یا } 2}$$



$$ABMD \rightarrow AD \cong BM$$

$$\hat{M}_1 = \hat{M}_2 = 90^\circ$$

$$\hat{D}_1 = \hat{D}_2 = \alpha$$

$$DM = DM$$

سوال ۲

$$\rightarrow \triangle D M \cong \triangle M B$$

$$HM, MB \rightarrow$$

$$DH = DB = 8$$

$$HC = DC - DH$$

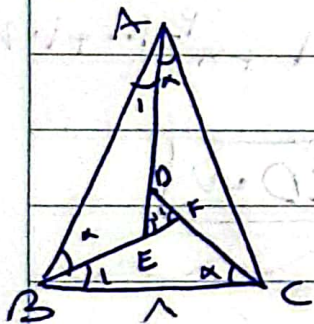
$$9 - 8 = 1$$

$$\frac{BM}{MH} = \frac{BH'}{H'C}$$

عکس
متناسب

$$MH \parallel HC \rightarrow \frac{BM}{BH} = \frac{MH}{HC}$$

$$2 = MH' \leftarrow \frac{1}{\frac{1}{2}} = \frac{MH'}{1}$$



$$\hat{F}_1 = \alpha + \beta = \beta$$

$$\hat{E}_1 = \alpha + \alpha = \alpha$$

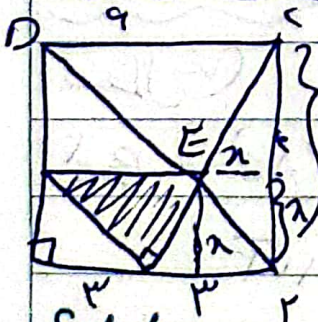
سوال ۳

$$(1) \rightarrow \left. \begin{array}{l} \hat{F}_1 = \beta \\ \hat{E}_1 = \alpha \end{array} \right\} \text{از} \rightarrow \triangle ABC \sim \triangle DEF$$

$$\frac{BC}{DF} = \frac{AB}{EF}$$

$$DF = 10, EF = 3 \rightarrow \frac{1}{10} = \frac{AB}{3} \rightarrow AB = 30$$

$$\rightarrow AB = 30$$



$$\left\{ \begin{array}{l} \hat{BCM} = \hat{AMF} \\ \hat{A} = \hat{B} = 90^\circ \end{array} \right. \Rightarrow \triangle BCM \cong \triangle AMF$$

$$\Rightarrow \triangle BCM \cong \triangle AMF$$

$$\frac{BM}{AF} = \frac{BC}{AM}$$

$$\frac{BM}{AF} = \frac{BC}{AM}$$

$$MF = AM + AF$$

$$\text{Sabalan } MF = 9 + \frac{9}{2} \rightarrow MF = \frac{27}{2}$$

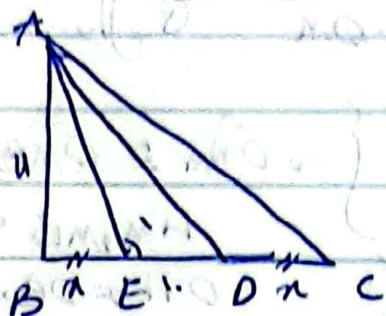
$$EK \parallel MB \rightarrow \frac{CK}{BC} = \frac{EK}{MB}, \quad \frac{4-n}{4} = \frac{n}{12} \rightarrow 4-n = 2n$$

$$n = 2$$

$$MH = 3 - 2 = 1$$

$$ME^2 = EH^2 + MH^2 \Rightarrow 2^2 + 1^2 = 5 \rightarrow ME = \sqrt{5}$$

$$S_{\Delta EFM} = \frac{1}{2} MF \times ME \Rightarrow \frac{1}{2} \times \frac{4}{3} \sqrt{5} \times \sqrt{5} = \frac{10}{3} \Rightarrow \frac{4}{3} \sqrt{5}$$



$$\begin{cases} \angle ADE = \angle ACD \\ \angle E_1 = \angle E_2 \end{cases}$$

$$\Rightarrow \triangle ADE \sim \triangle AEC$$

$$\frac{AD}{AC} = \frac{AE}{CE} = \frac{ED}{AE}$$

$$\frac{AE}{CE} = \frac{ED}{AE} \rightarrow AE^2 = ED \times CE$$

$$E^2 = 1 \times (1-n) \leftarrow 1 \times (1-n)$$

$$AE^2 = AB^2 + BE^2 \rightarrow AE^2 = 11^2 + n^2 \xrightarrow{(1)} 11^2 + n^2 = 1 \times (1-n)$$

$$n^2 = 1 \times n + 11 \Rightarrow (n-1)(n-11) = 0 \rightarrow \boxed{CD = 11}$$

$$EF^2 = DF \times FC \rightarrow E^2 = 1 \times FC \rightarrow FC = 14 \quad (\text{سوال 4})$$

$$(BC)^2 = CF \times CA \Rightarrow 14 \times (14 + 8) = 14 \times 22 \rightarrow BC = 2\sqrt{22}$$



$$AB^2 = AC \rightarrow AB^2 + AC^2 = BC^2 \quad (\text{سوال 4})$$

$$\rightarrow 2AC^2 = BC^2$$

$$AC\sqrt{2} = BC \Rightarrow 14 \rightarrow AC = \frac{14}{\sqrt{2}} = 7\sqrt{2}$$

$$\text{Sabalan } AB = 7\sqrt{2} \Rightarrow AM = \frac{1}{2} AC \Rightarrow \frac{1}{2} \times 7\sqrt{2} = 7\sqrt{2}$$

$$BM^2 = AB^2 + AM^2 \rightarrow BM^2 = (7\sqrt{2})^2 + (7\sqrt{2})^2 \rightarrow BM = 7\sqrt{4}$$

$$AE = 2BE$$

$$BC = 2BD$$

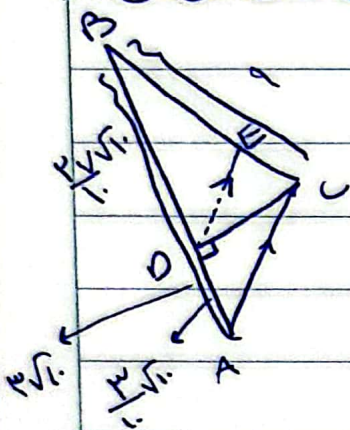
سوال 1

$$AC^2 = BD^2 + CD^2 = 8 + 16 = 24 \rightarrow BC = 2\sqrt{6}$$

$$\rightarrow BE = \frac{BC}{2} = \sqrt{6}$$

$$S_{ABE} = \frac{1}{2} BE \times AE = \frac{1}{2} \sqrt{6} \times 2\sqrt{6} = 6$$

$$AE = 2\sqrt{6}$$

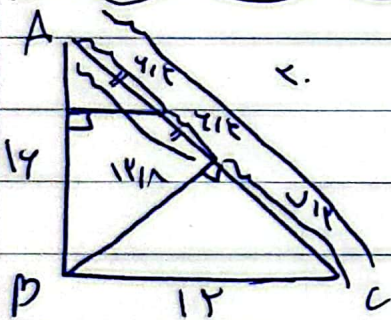


$$3^2 = AD \times 2\sqrt{6}$$

$$\rightarrow AD = \frac{9}{2\sqrt{6}} \rightarrow \frac{3}{1} \sqrt{6}$$

$$\frac{BE}{9} = \frac{2\sqrt{6}}{1}$$

$$BE = 18$$



$$(12)^2 = CH \times 2 \Rightarrow CH = 36$$

$$\frac{36}{12} = \frac{DE}{12} \rightarrow DE = 36$$

Sabalan