

$BC \parallel DE$

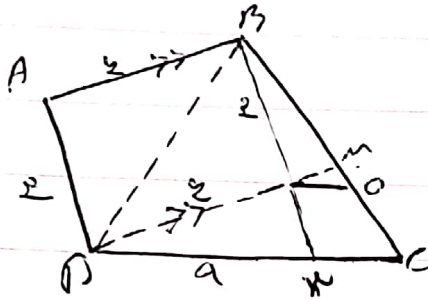
$$\frac{S_{\triangle BCE}}{S_{\triangle BDE}} = \frac{1}{2} \Rightarrow \frac{1}{2} = \frac{1}{2} = \frac{1}{2}$$

سوال ۱

$V_{SABE} = 2 \times V_{BDE}$

(نسبت قائمه تقسیم شود)

$$\frac{S_{\triangle ADE}}{S_{\triangle ABC}} = \left(\frac{1}{2}\right)^2 = \frac{1}{4}$$

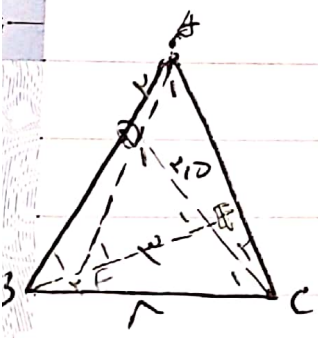


$$\hat{D}C = 2 \hat{B}D$$

$$\left. \begin{array}{l} \hat{D}_1 = \hat{D}_2 \\ \hat{M}_1 = \hat{M}_2 = 90^\circ \end{array} \right\} \rightarrow \triangle DMB \cong \triangle DMN \Rightarrow NM = 2, DN = 2$$

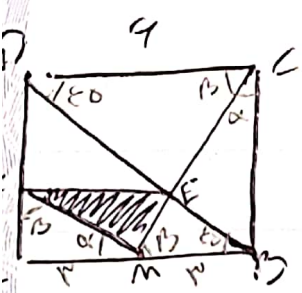
سوال ۲

$$C \rightarrow \text{موسط } B \rightarrow \text{نسبت } \rightarrow 9 - 2 = 7 \rightarrow 2$$



$$\left. \begin{array}{l} \hat{D}_1 = \hat{A}_1 + \hat{C}_1 \\ \hat{C}_1 + \hat{A}_1 \end{array} \right\} \rightarrow \hat{D}_1 = \hat{C} \Rightarrow \hat{F}_1 = \hat{B} \Rightarrow \hat{E} = \hat{A} \Rightarrow \triangle DEF \sim \triangle CBA$$

$$\rightarrow \frac{EF}{BA} = \frac{FD}{CB} = \frac{ED}{CA} \Rightarrow \frac{1}{BA} = \frac{1}{1} \Rightarrow BA = \frac{1}{1} = 1, 1$$



$$\tan \beta = \frac{AM}{AF} = \frac{BC}{MB} \rightarrow \frac{3}{AF} = 2 \rightarrow AF = \frac{3}{2}$$

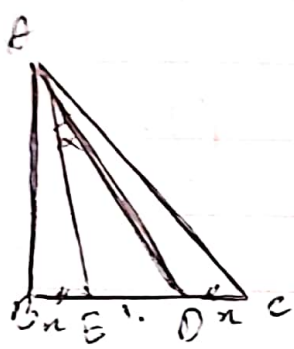
سوال ۳

$$\sqrt{\left(\frac{3}{2}\right)^2 + 3^2} = \sqrt{\frac{9}{4} + 9} = \sqrt{\frac{45}{4}} = \frac{3\sqrt{5}}{2}$$

$$\left. \begin{array}{l} \hat{E}_1 = \hat{E}_2 \\ \hat{DCE} = \hat{BME} \end{array} \right\} \rightarrow \triangle DCE \sim \triangle MEB \rightarrow \frac{1}{2} = \frac{1}{2} = 2$$

$$\rightarrow 0.37 = \sqrt{4^2 + 3^2} = \sqrt{25} = 5 \rightarrow 5$$

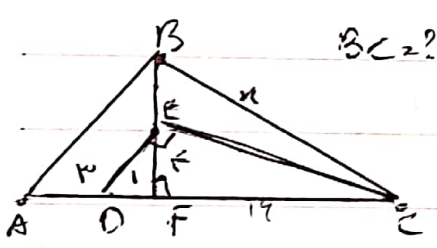
$$S_{FEM} = \frac{1}{2} \times MF \times EM = \frac{1}{2} \times \frac{3\sqrt{5}}{2} \times \sqrt{5} = \frac{15}{4} = 3.75$$



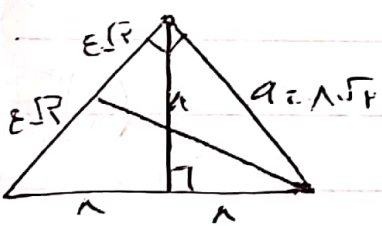
$$\left. \begin{array}{l} \hat{\alpha} = \hat{\alpha} \\ \hat{E} = \hat{E} \\ \hat{D}_1 = \hat{A}_1 \end{array} \right\} \rightarrow \triangle ADE \sim \triangle ADE \rightarrow \frac{AE}{ED} = \frac{CE}{AE} \rightarrow$$

$$\frac{\sqrt{n^2+11^2}}{n+1} = \frac{10}{\sqrt{11^2+n^2}} \Rightarrow 11^2+n^2 = 1 \cdot n+1$$

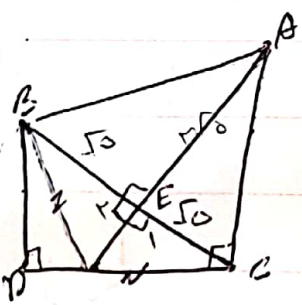
$$\Rightarrow n^2 - 1 \cdot n + 1 = 0 \rightarrow (n-4)(n-1) = 0 \rightarrow n = \boxed{4 \text{ or } 1}$$



$$\begin{aligned} EF^2 &= DF \cdot CF \rightarrow 14^2 = 1 \cdot CF \rightarrow CF = 196 \\ n^2 &= CF \cdot AC \rightarrow n^2 = 196 \cdot 2 \\ n &= \sqrt{392} = 14\sqrt{2} \end{aligned}$$



$$\begin{aligned} 14^2 &= 196 \rightarrow a^2 = 196 \cdot 2 \rightarrow a = \sqrt{392} = 14\sqrt{2} \\ n^2 &= \sqrt{(14\sqrt{2})^2 + (14\sqrt{2})^2} = \sqrt{196 \cdot 2 + 196 \cdot 2} = \sqrt{784 \cdot 2} = \sqrt{1568} = 40\sqrt{2} \end{aligned}$$



$$\left. \begin{array}{l} \overline{CO} = \overline{BO} \\ \hat{E}_1 = \hat{E}_2 = 90^\circ \\ CE \text{ is the bisector} \end{array} \right\} \xrightarrow{\text{مربعين}} \triangle OEB \cong \triangle OEC \Rightarrow CE = BE = \sqrt{50}$$

المساحة
(B) = 150

$$\left. \begin{array}{l} \hat{E}_1 = \hat{D} = 90^\circ \\ \hat{A} = \hat{A} \end{array} \right\} \xrightarrow{\text{مربعين}} \triangle OEC \sim \triangle ODB \Rightarrow OE = \frac{1}{2} OB = \frac{\sqrt{50}}{2}$$

$$CE^2 = OE - AE \Rightarrow \Delta = \frac{\sqrt{50}}{2} \cdot EA \rightarrow EA = 2\sqrt{50}$$

$$\Rightarrow \triangle ABC = \frac{\sqrt{50} \times 2\sqrt{50}}{2} = 25$$



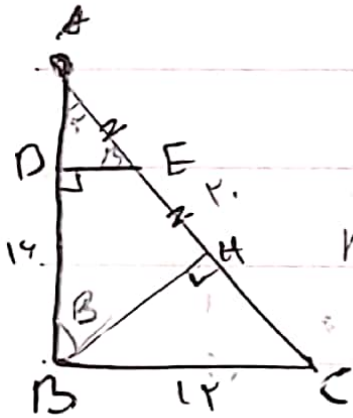
$$BC^2 = BD \cdot AC \rightarrow 9^2 = BD \cdot \sqrt{9}$$

$$\rightarrow BD = \frac{81}{\sqrt{9}} = \frac{27}{\sqrt{1}}$$

(س ۹)

$$BD^2 = BE \cdot BC \rightarrow \left(\frac{27}{\sqrt{1}}\right)^2 = BE \cdot 9$$

$$BE = \frac{27^2 \cdot 27}{1 \cdot 9} = \boxed{11}$$



(س ۱۰)

$$AC = 12$$

$$BH \cdot AC = AB \cdot BC \rightarrow BH \cdot 12 = 12 \cdot 12 \rightarrow BH = \frac{144}{12} = 12$$

$$AH = \sqrt{12^2 - 12^2} = 0 \rightarrow AE = 0$$

$$\left. \begin{matrix} \hat{A} = \hat{A} \\ H = D \end{matrix} \right\} \rightarrow \triangle ADE \sim \triangle AHB \rightarrow \frac{DE}{BH} = \frac{AE}{AB} \rightarrow \frac{DE}{12} = \frac{0}{12} \rightarrow DE = 0$$

$$= \boxed{0}$$