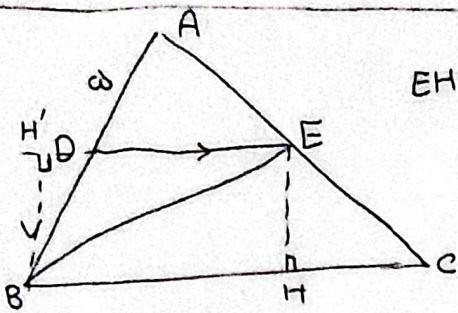
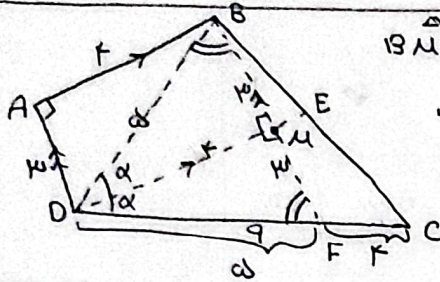




$$EH = BH' \rightarrow \frac{S_{BCE}}{S_{BDE}} = \frac{EH \times BC \times \frac{1}{2}}{\frac{1}{2} \times DE \times BH'} = \frac{12}{5} = 2.4$$

$$\frac{DE}{BC} = \frac{AD}{AB} = \frac{5}{12}$$

1.

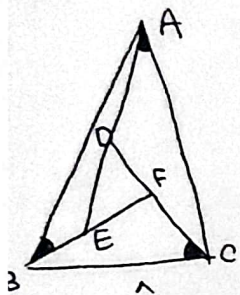


$$\triangle MD \cong \triangle MF \rightarrow BM = MF = 3$$

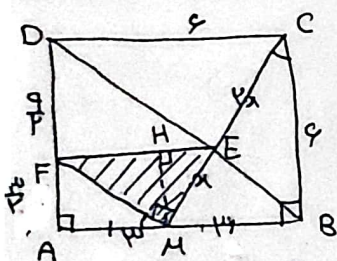
2. طبق خواص منبسط و میان خطی متوازی BC

می شود $\rightarrow ME = \frac{DM}{2} = 1.5$

3.



$$\triangle ABC \sim \triangle DEF \rightarrow \frac{AB}{3} = \frac{1}{\sqrt{10}} \rightarrow AB = 3\sqrt{10}$$



$$\triangle BCM \sim \triangle AMF \rightarrow \frac{BM}{AF} = \frac{CM}{FM} = \frac{28}{14} = 2$$

$$CM = \sqrt{10 \times 9 + 9} = 3\sqrt{10}$$

$$AF = 7$$

$$DF = 9 - \frac{10}{2} = \frac{9}{2}$$

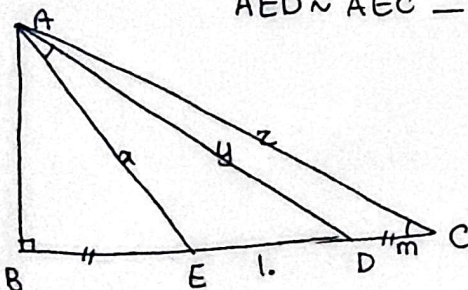
$$FM = \sqrt{9 + \frac{9}{4}} = \sqrt{\frac{45}{4}} = \frac{3\sqrt{5}}{2}$$

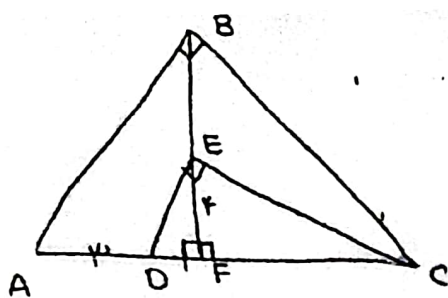
$$DB = 6\sqrt{2}$$

$$\triangle BEM \sim \triangle CED \rightarrow \frac{ME}{EC} = \frac{BM}{CD} \rightarrow \frac{ME}{10} = \frac{3\sqrt{10}}{20} \rightarrow ME = \frac{3\sqrt{10}}{2}$$

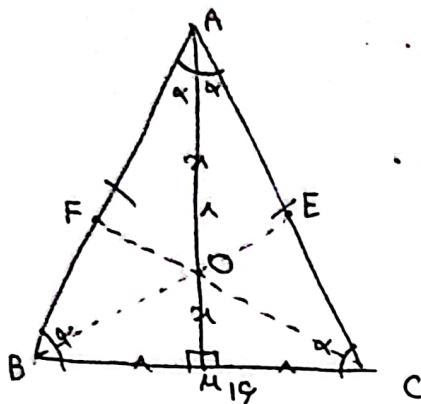
$$\triangle AED \sim \triangle AEC \rightarrow \frac{1}{x} = \frac{y}{z} = \frac{x}{1+m} \rightarrow x^2 = 1 \cdot (1+m) \rightarrow m^2 - 1 \cdot m + 2 = 0 \rightarrow m = 2, 1$$

5.





$$\left. \begin{aligned} EF^2 &= 19 = DF \times FC \rightarrow FC = 19 \\ BF^2 &= AF \times FC = 4 \times 19 \rightarrow BF = 2 \end{aligned} \right\} \rightarrow BC = 10\sqrt{2}$$



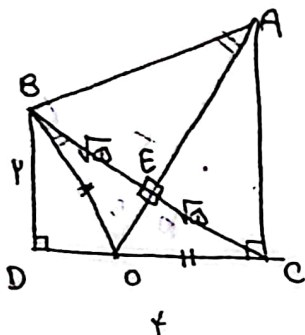
$$\frac{OM}{OA} = \frac{1}{3} \rightarrow 4x = 1 \rightarrow x = \frac{1}{4} = OM \rightarrow AO = \frac{12}{4}$$

$$\sqrt{\frac{EF^2}{9} + 4F} = OB \rightarrow OB = \frac{1}{3}\sqrt{19}$$

$$\frac{OB}{OE} = \frac{1}{1} = \frac{\frac{1}{3}\sqrt{19}}{\frac{1}{3}\sqrt{19}} \rightarrow BE = \frac{1}{3}\sqrt{19} = FC$$

.7

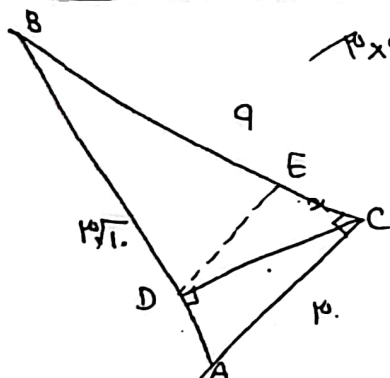
.8



$$\triangle BEC \cong \triangle EOC \rightarrow BE = EC \rightarrow BC = \sqrt{4+19} = 5\sqrt{2} \rightarrow BE = EC = \sqrt{2}$$

$$\frac{1}{\sqrt{2}} = \frac{1}{AE} = \frac{5\sqrt{2}}{5} \rightarrow AE = 5\sqrt{2} \rightarrow S_{ABE} = \frac{5\sqrt{2} \times \sqrt{2}}{2} = 5$$

.9

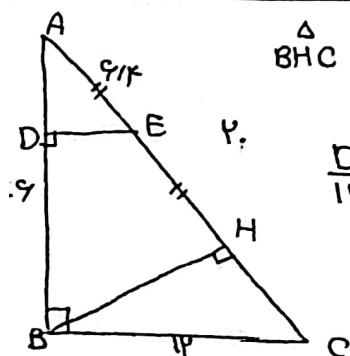


$$10 \times 9 = 10\sqrt{10} \times DC \rightarrow DC = \frac{9}{1}\sqrt{10} \rightarrow DA + \left(\frac{9}{1}\sqrt{10}\right)^2 = 9 \rightarrow DA = \frac{10\sqrt{10}}{1}$$

$$\frac{EC}{9} = \frac{10\sqrt{10}}{10\sqrt{10}} \rightarrow EC = 9$$

$$9 - 9 = 0$$

.10



$$\triangle BHC \sim \triangle ABC \rightarrow \frac{1}{12} = \frac{12}{CH} \rightarrow CH = 144 \rightarrow 12 - 144 = -132 = 9K = AE = EH$$

$$\frac{DE}{12} = \frac{9K}{12} \rightarrow DE = 9K$$