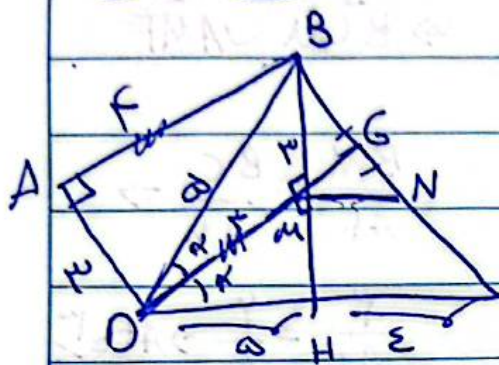


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$$\frac{S_{BCE}}{S_{BDE}} = \frac{BC}{DE} \quad \frac{AO}{AB} = \frac{DE}{BC} \Rightarrow \frac{\alpha}{14} = \frac{DE}{BC} \Rightarrow \frac{BC}{DE} = \frac{14}{\alpha} \quad (1)$$

ABMD
مستطیل

$$\Rightarrow AD = BM \\ AB = DM$$

MH = r (2)

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

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

$$\Rightarrow \triangle H M \cong \triangle M B$$

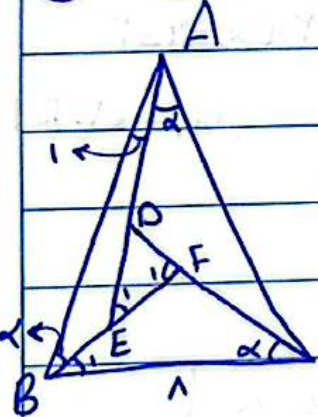
HM, MB

$$OH = DB$$

$$HC = DC - DH \rightarrow 9 - \alpha = \epsilon$$

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

(3)



$$\hat{F}_1 = \alpha + \hat{B}_1 = \hat{B}_{(1)}$$

$$\hat{E}_1 = \hat{A}_1 + \alpha = \hat{A}_{(x)}$$

$$(1) \hat{F}_1 = \hat{B}_{(1)}$$

$$(2) \hat{E}_1 = \hat{A}_{(x)}$$

$$\Rightarrow \triangle ABC \sim \triangle DEF \Rightarrow \frac{BC}{DF} = \frac{AB}{EF}$$

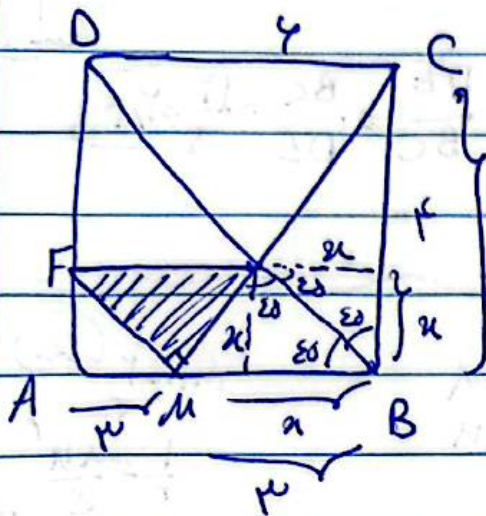
$$DE = r, \alpha, EF = r \Rightarrow \frac{1}{r, \alpha} = \frac{AB}{r}$$

$$AB = 9, r$$

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$$\gamma \int \hat{B}_{CM} = \hat{A}_{MF}$$

$$\left| \hat{A} = \hat{B} \right. \Rightarrow \hat{B}_{CM}^{\Delta} \sim \hat{A}_{MF}^{\Delta}$$

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

$$\frac{1}{AF} \approx \frac{1}{F} \Rightarrow AF \approx F$$

$$MF^r = AM^r + AF^r \Rightarrow MF^r = 9 + \frac{9}{2} \Rightarrow MF = 5\sqrt{2}$$

$$EK \parallel MB \Rightarrow \frac{CK}{BC} = \frac{EK}{MB} \Rightarrow \frac{y-u}{y} = \frac{u}{r} \Rightarrow y-u = ru \Rightarrow u = \frac{y}{r+1}$$

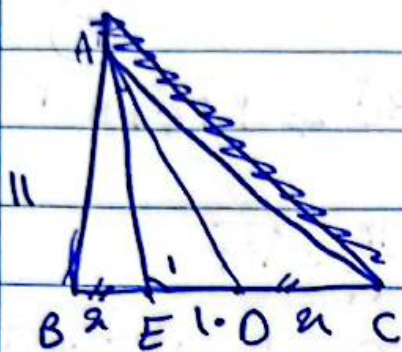
$$ME^P = EH^P + MH^P = \gamma^P + 1^P \rightarrow ME = \sqrt{a}$$

$$S_{EFU} = \frac{1}{P} M_F \times M_E = \frac{1}{P} \times \frac{P}{r} \sqrt{a} \times \sqrt{a} = \frac{1}{r} \sqrt{a} \times \sqrt{a}$$

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$$\left\{ \begin{array}{l} \angle ADE = \angle ACD \\ \angle E_1 = \angle E_1 \end{array} \right\} \Rightarrow \triangle ADE \sim \triangle AEC \quad (a)$$

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

$$BE = DE = x$$

$$\frac{AE}{CE} = \frac{ED}{AE} \Rightarrow AE^2 = ED \times CE = 1 \cdot (1+x) = 1+x$$

$$AE^2 = 1+x \quad (1)$$

$$AE^2 = AB^2 + BE^2 \Rightarrow AE^2 = 1^2 + x^2 \xrightarrow{(1)} 1+x = 1+x^2$$

$$x^2 - 1x + 1 = 0$$

$$x = \frac{1 \pm \sqrt{1-4}}{2}$$

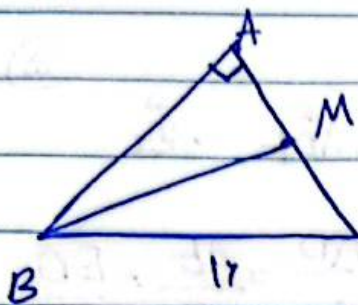
$$\left\{ \begin{array}{l} x = \frac{1+\sqrt{3}}{2} \\ x = \frac{1-\sqrt{3}}{2} \end{array} \right. \Rightarrow \boxed{0 < x}$$

$$EF^2 = DF \times FC \Rightarrow x^2 = 1 \times FC \Rightarrow FC = x^2$$

$$BC^2 = CF \times CA = x^2 \times (1+x) = x^2 \times x^2 \Rightarrow BC = x^2 = 1 \sqrt{3} = \sqrt{3}$$

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$$AB = AC, AB^2 + AC^2 = BC^2 \Rightarrow 2AC^2 = BC^2 \quad (7)$$

$$AC \sqrt{2} = BC = 17 \Rightarrow AC = \frac{17}{\sqrt{2}} = 17\sqrt{2} \quad (5)$$

$$\hookrightarrow AB = 17\sqrt{2}, AM = \frac{1}{2}AC = \frac{1}{2} \times 17\sqrt{2} = 17\sqrt{2}$$

$$BM^2 = AB^2 + AM^2 \Rightarrow AM^2 = (17\sqrt{2})^2 + (17\sqrt{2})^2 = 2 \times 17 \times 17 = 17^2$$

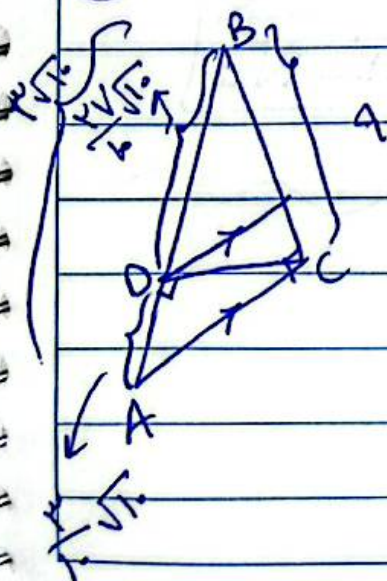
$$BM = 17$$

$$AE = 2BE \quad DC = 2BD \quad (8)$$

$$BC^2 = BD^2 + CD^2 = 4 + 16 = 20 \rightarrow BC = 2\sqrt{5} \rightarrow BE = \frac{BC}{2} = \sqrt{5}$$

$$AE = 2\sqrt{5} \quad (5)$$

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



$$3^2 = AD \times 3\sqrt{10} \Rightarrow AD = \frac{9}{3\sqrt{10}} = \frac{3}{\sqrt{10}} = \frac{3\sqrt{10}}{10}$$

$$\frac{BE}{9} = \frac{\frac{3\sqrt{10}}{10} \sqrt{10}}{3\sqrt{10}} \Rightarrow \frac{BE}{9} = \frac{3}{3} = 1 \Rightarrow BE = 1$$

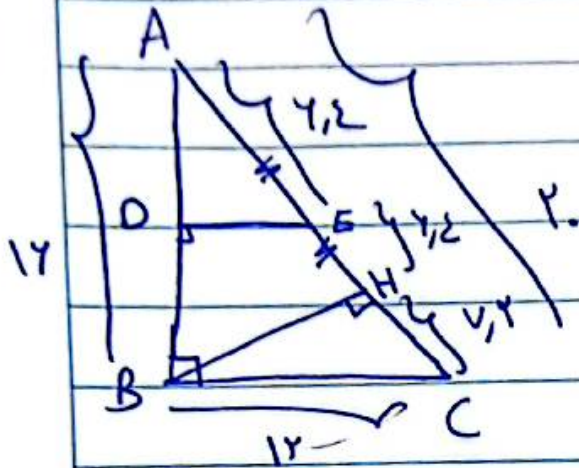
$$BE = 1$$

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$$(12)^2 = CH \times AC \Rightarrow CH = \frac{144}{13}$$

$$\frac{4.5}{13} = \frac{DE}{12} \Rightarrow DE = \frac{54}{13}$$

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