

$$BC \parallel DE \Rightarrow \frac{DE}{BC} = \frac{a}{12} \quad (1)$$

(۲) های نسبتی ها برابرند

$$\frac{S_{\triangle BCE}}{S_{\triangle DEB}} = \frac{BC}{DE} = \frac{12}{a} = \frac{1}{4}$$

ABMD مستطین

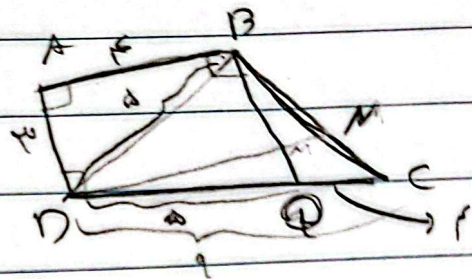
$$AD = 2 \quad BA = 1 \quad BD = a$$

$$BD^2 = 2^2 + 1^2 = 5 \Rightarrow BD = \sqrt{5}$$

$$\triangle BDQ \rightarrow DQ = a$$

$$MN = DQ \Rightarrow MN = 2$$

$$m \angle B = m \angle B = 3$$

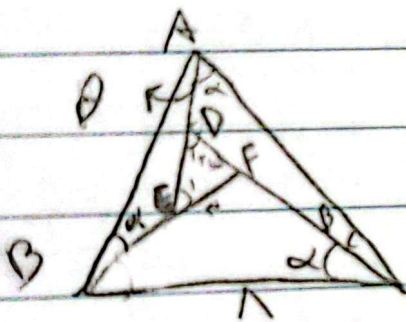


$$\angle A \hat{P} F = \angle C \hat{A} G = \angle B \hat{C} D$$

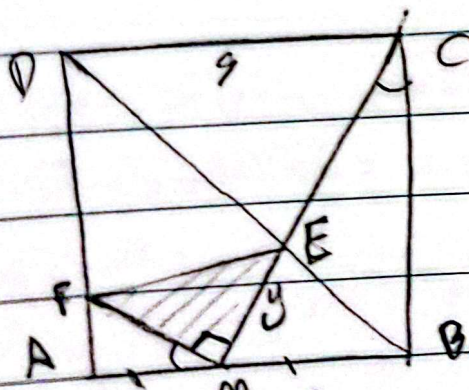
$$DF = 2/1 \quad AB = ?$$

$$\angle E_1 = \alpha + \beta = \hat{A}$$

$$\angle D_1 = \alpha + \beta = \hat{C}$$



$$(I) \Rightarrow \frac{DF}{BC} = \frac{EF}{AB} \Rightarrow \frac{2/a}{1} = \frac{r}{AB} \Rightarrow AB = \frac{12r}{r/a} = 9/5$$



$$\angle BCE = \angle A \hat{M} F$$

$$m \angle C = m \angle C + m \angle B = 3 + 2 = 5 \Rightarrow m \angle C = 5 \Rightarrow \sqrt{a}$$

$$\tan F = \frac{r}{a} = \tan M = \frac{BC}{a} = 2 \Rightarrow AF = \frac{r}{2}$$

$$FM^2 = AF^2 + AM^2 \Rightarrow MF = \frac{\sqrt{5}a}{2}$$

$$DEC, m \angle B = 3 \Rightarrow \frac{2}{a} \leq r \Rightarrow 3y = \sqrt{5}a \Rightarrow y = \sqrt{a}$$

$$S_{\triangle FBM} = \frac{ME \cdot MF}{2} = \frac{\sqrt{5} \cdot \sqrt{a}}{2} = \frac{1a}{2} = 1/2a$$

$$\left. \begin{array}{l} A_1 \hat{=} C_1 \\ B_1 \hat{=} B_1 \end{array} \right\} \Delta APB \sim \Delta CBE \rightarrow \frac{AP}{AC} = \frac{BE}{CB} = \frac{PB}{CE} \rightarrow AB^2 = BE \times CB \quad (9)$$

$$AB^2 = 10(10 + BC) = 100 + 10BC$$

$$AB^2 = AB^2 + BE^2 \rightarrow 100 + 10CB = 100 + BE^2 \xrightarrow{CB=BE} 2x + 10 = 100$$

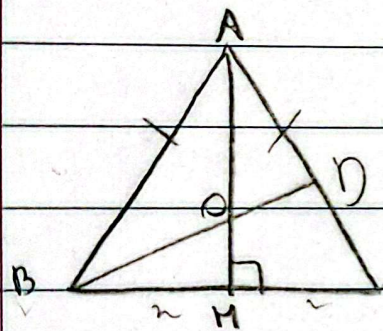
$$2x - 10 = 90 \rightarrow 2x = 100 \rightarrow x = 50 \rightarrow (2x - 10)(2x - 10) = 0$$

$$\left\{ \begin{array}{l} 2x = 50 \\ 2x = 100 \end{array} \right\}$$

BC = ?

$$DFC \rightarrow BF^2 = DF \times FC \rightarrow EF^2 = FC \times 1 \rightarrow FC = 19$$

$$\Delta BCF \rightarrow FC \times AC = 19(19 + x) = 380 \rightarrow BC = 11\sqrt{19}$$



$$AH = 5$$

$$HO = 2 \rightarrow 5x = 1 \Rightarrow x = \frac{1}{5}$$

$$MO = \frac{1}{5}$$

$$BD = 1 + \frac{1}{5} = \frac{6}{5} = \frac{6\sqrt{10}}{5}$$

$$\frac{BD}{BO} = \frac{3}{5} = \frac{BD}{\frac{6\sqrt{10}}{5}} \Rightarrow BD = \frac{6\sqrt{10}}{5}$$

$$\left. \begin{array}{l} OB = OE \\ OB = OC \\ OB = OF \end{array} \right\}$$

$$\Delta BPF \sim \Delta CBE \rightarrow BE = EC$$

$$BC = \sqrt{5+15} = \sqrt{20} = 2\sqrt{5}$$

$$\rightarrow BC = 2\sqrt{5} \rightarrow EC = \sqrt{5}$$

$$\left. \begin{array}{l} \hat{D} = \hat{E} = 90^\circ \\ \hat{B}_1 = \hat{C}_1 \end{array} \right\} \rightarrow \Delta BCD \sim \Delta ECF \rightarrow \frac{2}{\sqrt{5}} = \frac{r}{AB} = \frac{2\sqrt{5}}{5} \rightarrow AB = 5$$

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

$$D_1 = 2$$

$$D_1 + C_1 = 1 \text{ m}$$

$$CD^2 + BD^2 = BC^2$$

(9)

$$C_1 = y$$

$$DC^2 = 1 - \frac{y^2}{1} = \frac{1}{1} \Rightarrow DC = \frac{1}{\sqrt{1}}$$

$$\rightarrow BA = \sqrt{2}$$

$$BC^2 = BD \cdot BA \rightarrow BD = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

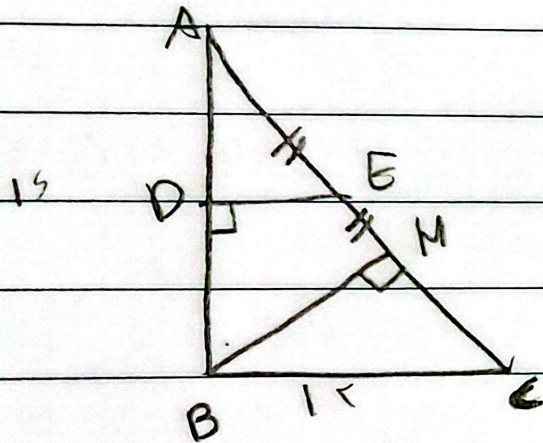
$$DE^2 + EC^2 = DC^2$$

(5)

$$\rightarrow DC^2 = CE^2 \times CB^2 \rightarrow \frac{1}{1} = CE^2 \times 1$$

$$CE^2 = \frac{1}{1} = 1 \rightarrow CE = 1$$

$$EB = BC - CE = 1/1$$



$$\triangle ABM \rightarrow DE \times AB = BM \times BE$$

(10)

$$5 = \frac{BM \times 1.5}{1.5} = \frac{1.5 \times 1.5}{1.5}$$

$$\Rightarrow BM = \frac{9}{1.5} = 6$$

(5)

$$1.5^2 = 2.0^2 + (AM)^2 \rightarrow AE = AM \rightarrow AE = 9/5$$

$$DE = \frac{9/5 \times 9/5}{1.5} = \frac{81/25}{1.5} = \frac{27}{12.5}$$