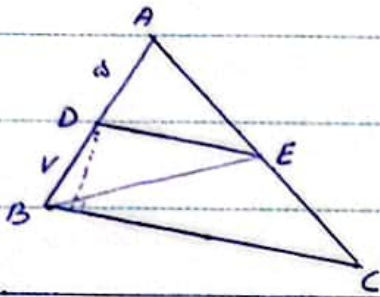
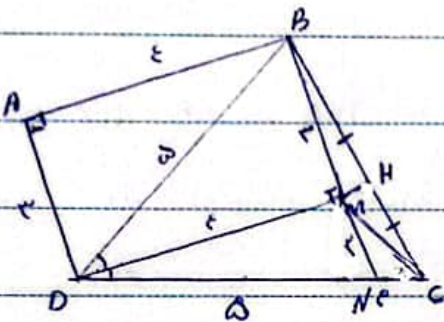


آرشداد یاسر یازدهم دفتر A تالیف شماره ۱۲:

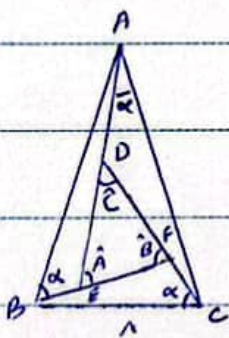


$$\frac{S_{\triangle BCE}}{S_{\triangle BDE}} = \frac{BC}{DE} = \frac{AB}{AD} = \frac{12}{14} = \frac{3}{7}$$



$$\sqrt{AB^2 + AD^2} = BD \rightarrow \sqrt{14^2 + 9} = 15 = BD$$

$$\left. \begin{array}{l} \hat{D}_1 = \hat{D}_r \\ MD = MD \\ \hat{M}_1 = \hat{M}_r = 90^\circ \end{array} \right\} \Rightarrow \triangle BDM \cong \triangle DNM$$

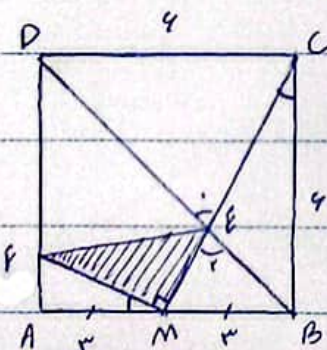


$$\hat{EFD} = \hat{B} - \alpha + \alpha = \hat{B}$$

$$\hat{DEF} = \hat{A} - \alpha + \alpha = \hat{A} \rightarrow \triangle ABC \sim \triangle DEF$$

$$\hat{EDF} = \hat{C} - \alpha + \alpha = \hat{C}$$

$$\frac{r_1 \omega}{1} = \frac{r_2}{n} \Rightarrow n = \frac{r_2 \omega}{r_1 \omega} = 1,4$$



$$CD \parallel MB \rightarrow \left. \begin{array}{l} \hat{E}_1 = \hat{E}_r \\ \hat{C}_1 = \hat{M}_1 \\ D_1 = B_1 \end{array} \right\} \triangle DEC \sim \triangle MB$$

$$\Rightarrow \frac{DC}{MB} = \frac{DE}{EB} = \frac{CE}{ME} = r \rightarrow CE = rME$$

$$CM = CE + EM = rME + ME = rME$$

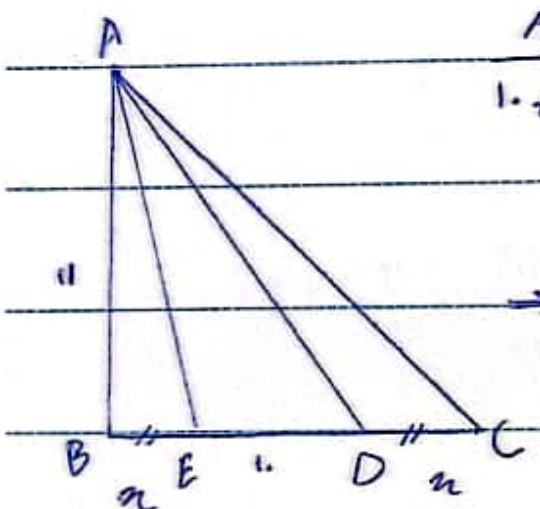
$$CM^2 = MB^2 + BC^2 \rightarrow 9ME^2 = 14^2 + 9 = 25 \rightarrow ME^2 = 5$$

$$\Rightarrow ME = \sqrt{5}$$

$$\frac{AE}{1+x} = \frac{AD}{AC} = 1 \Rightarrow AE^r = 1 \cdot (1+x) \quad \text{--- c)$$

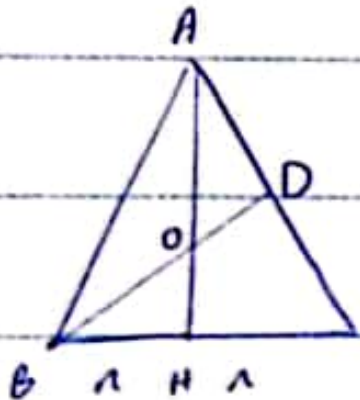
$$\Rightarrow |x| + x^r = 1 + 1 \cdot x \Rightarrow x^r - 1 \cdot x + |x| = 0$$

$$(x-v)(x-r) = 0 \Rightarrow \begin{matrix} \widetilde{m=r} \rightarrow X \\ \widetilde{m=v} \rightarrow \checkmark \end{matrix} \Rightarrow DC = V$$



$$\triangle DFC \rightarrow EF^r = DF \times FC \rightarrow \epsilon^r = 1 \times FC \rightarrow FC = 14 \quad -4$$

$$\triangle ABC \rightarrow BC^r = CF \times CA \rightarrow 14 \times (14 + \epsilon) = 14 \times 20 \rightarrow BC = 1\sqrt{2}$$



$$AH = 2n \quad HO = n \rightarrow 3n = 1 \rightarrow n = \frac{1}{3} \quad -5$$

$$AH = \frac{14}{3} \quad HO = \frac{1}{3}$$

$$\triangle BOH = 14 + \frac{1}{4} = \frac{140}{4} \Rightarrow \frac{\epsilon\sqrt{11}}{3} = BO$$

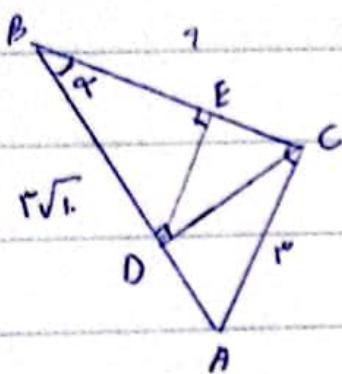
$$\frac{BD}{BO} = 3 = \frac{BD}{\frac{\epsilon\sqrt{11}}{3}} \rightarrow BD = \epsilon\sqrt{11}$$

$$\left. \begin{array}{l} OE = OE \\ OB = OC \\ O_1 = O_2 \end{array} \right\} \triangle BOE \cong \triangle COE \rightarrow BE = CE \rightarrow BC = \sqrt{E+14} = 2\sqrt{5} \rightarrow BC = EC = 2\sqrt{5}$$

$$EC = \sqrt{5}$$

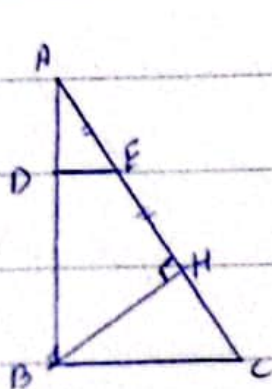
$$\left. \begin{array}{l} \hat{D} = \hat{E} = 90^\circ \\ \hat{B}_1 = \hat{C}_1 \end{array} \right\} \triangle BCD \sim \triangle AEC \rightarrow \frac{r}{\sqrt{5}} = \frac{4}{AE} = \frac{2\sqrt{5}}{5} \rightarrow AE = 2\sqrt{5}$$

$$S = \frac{2\sqrt{5} \times \sqrt{5}}{2} = 5$$



$$\tan \alpha = \frac{r}{4} = \frac{1}{r} \rightarrow \cos \alpha = \frac{r}{\sqrt{5}}$$

$$BE = BC \times \frac{BD}{BC} \times \frac{BE}{BD} = 9 \times \frac{r}{\sqrt{5}} \times \frac{r}{\sqrt{5}} = \frac{9}{1} = 9$$



$$\triangle ABH \rightarrow DE \times AB = BH \times AH$$

$$S = \frac{BH \times r}{2} = \frac{14 \times 17}{2} \rightarrow BH = 9.4$$

$$14^2 = 17^2 + AE^2 \rightarrow 2AE = AH \rightarrow AE = 9.4$$

$$DE = \frac{9.4 \times 9.4}{17} = 5.1 \times 1.4 = 7.14$$