

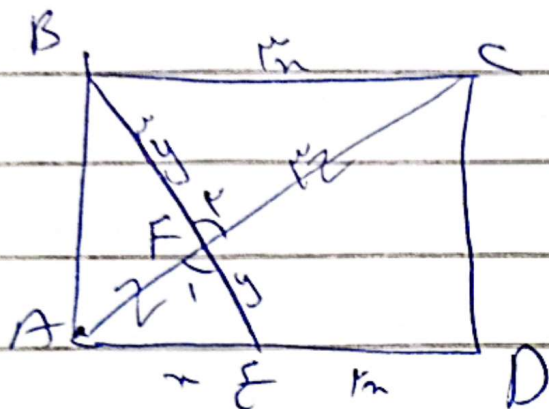
Thema: 10

10.10.18

11.10.18

$$\Sigma D = \Sigma AE$$

(1)



$$AE \parallel BC$$

$$\hat{F}_1 = \hat{F}_2$$

$$\Rightarrow \triangle AEF \sim \triangle BEC$$

$$\text{Zus } E = B$$

$$C = A$$

$$\frac{EF}{AE} = \frac{n}{r} = \frac{FE}{BE} = \frac{AF}{EC} = \frac{1}{r}$$

$$AB^2 + AE^2 = BE^2 \rightarrow n^2 + x^2 = 9n^2 + x^2 = 10n^2$$

$$BE = \sqrt{10} n = \varepsilon y$$

$$EF = \frac{\sqrt{10}}{2} n$$

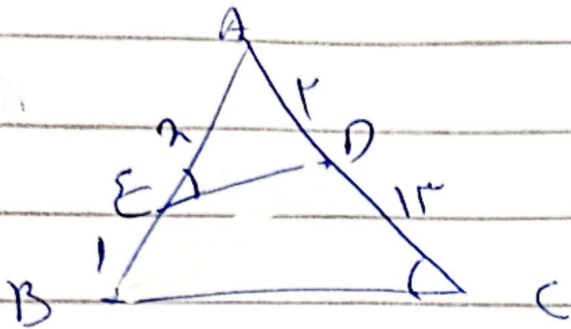
$$AD^2 + CD^2 = AC^2$$

$$(m)^2 + (m)^2 = AC^2 \rightarrow AC = \sqrt{2} m = r_2$$

$$\frac{EF}{AF} = \frac{\frac{\sqrt{10}}{2} n}{\frac{\sqrt{10}}{r} z} = \frac{\frac{\sqrt{10}}{2} n}{\frac{\sqrt{10}}{\sqrt{2}} n} = \frac{\sqrt{2}}{2}$$

$$\hat{AED} = \hat{ACB}$$

②



$$\hat{A} = \hat{A} \quad \text{---} \quad \hat{A} \hat{E} D \sim \hat{A} \hat{B} C$$

$$\frac{AD}{AB} = \frac{AE}{AC} = \frac{ED}{BC}$$

$$\frac{Y}{x+1} = \frac{2}{18} = \frac{ED}{BC}$$

$$n(n+1) = 20$$

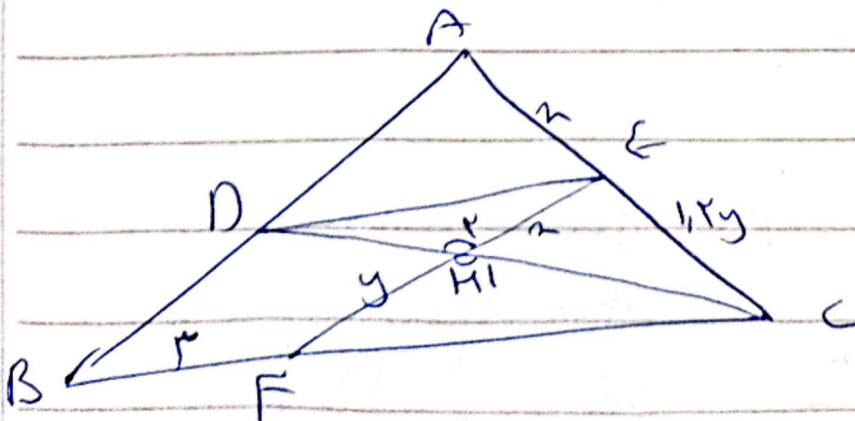
$$n^2 + n - 10 = 0 \rightarrow (n+9)(n-4) = 0$$

$n = 9$ فوق

$$n=4$$

$DE \parallel BE$, $\angle y = \angle x$, $\angle F = \angle$ $\angle C = \angle$

②



$$\begin{aligned} \hat{H}_1 &= \hat{H}_T \\ \hat{\Sigma} &= \hat{F} \\ \hat{D} &= \hat{C} \end{aligned}$$

$$\frac{FM}{EM} = \frac{CM}{DM} = \frac{FC}{DC}$$

$$\frac{y}{n} = \frac{CH}{DH} = \frac{FE}{DE} = \frac{\omega}{r}$$

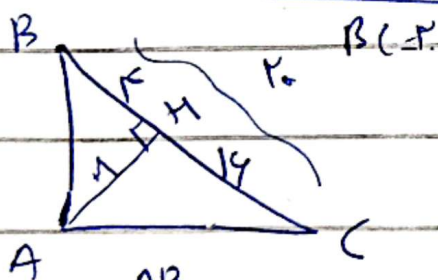
$$DE \parallel BC \rightarrow \frac{n}{r+n} = \frac{DE - r_n}{BC - r}$$

$$\downarrow \frac{1}{r} = \frac{r_n}{r+n}$$

$$rn = rn + r$$

$$rn = r \rightarrow n = \frac{r}{r}$$

$$BC = FC + BF = r + \omega \times \frac{r}{r} = r + \frac{10}{2} = \frac{2\sqrt{5}}{r}$$



$$AH \cdot r = BH \times CH$$

$$AH \cdot r = 14 \times 5 \rightarrow AH = 1$$

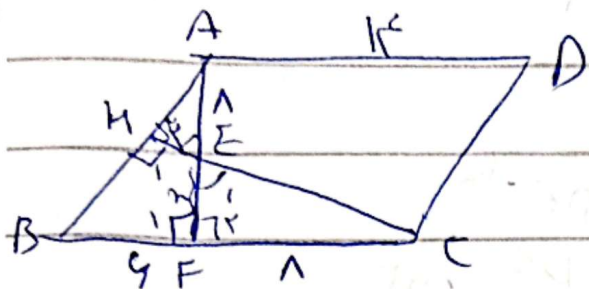
$$AB^2 = 1^2 + 5^2 \rightarrow AB = \sqrt{26}$$

$$AC^2 = 14^2 + 1^2 \rightarrow AC = 1\sqrt{197} = 1\sqrt{197}$$

$$\frac{AB}{AC} = \frac{\sqrt{26}}{1\sqrt{197}} = \frac{r\sqrt{26}}{1\sqrt{26}} = \frac{1}{r}$$



$$AD = 12, BF = 4, AE = 1, AF = ? \quad (9)$$



$$\begin{cases} \hat{E}_1 = \hat{E}_2 \\ \hat{F}_1 = \hat{F}_2 = 90^\circ \end{cases} \rightarrow \triangle ABF \sim \triangle CEF$$

$$\frac{AF}{CF} = \frac{BF}{EF} = \frac{AB}{CE}$$

$$\frac{1+n}{1} = \frac{4}{EF}$$

$$n(1+n) = 4$$

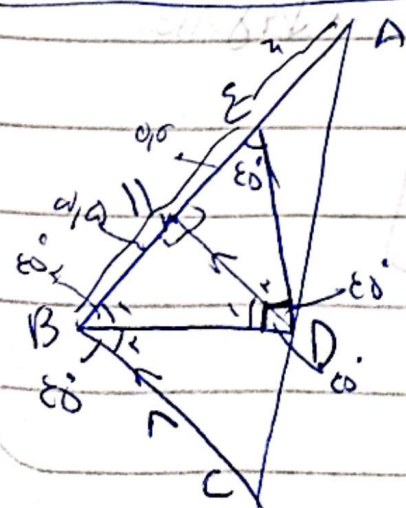
$$n^2 + n - 4 = 0$$

$$(n+12)(n-1) = 0$$

$$n = -12 \text{ or } 1$$

$$\underline{n = 1}$$

$$AF = 1 + n = 1 + 1 = \underline{2}$$



$$\text{BD} \parallel \text{AC} \quad AE = ? \quad (9)$$

$$\hat{B}_1 = \hat{B}_2 = \hat{D}_1 \Rightarrow B_1 = D_1 = 90^\circ$$

$$B_1 = E$$

$$D_1 = B$$

مستقيم HD

$$\rightarrow BDH \sim DHE$$

$$BH = CH = \frac{11}{2} = 5.5$$

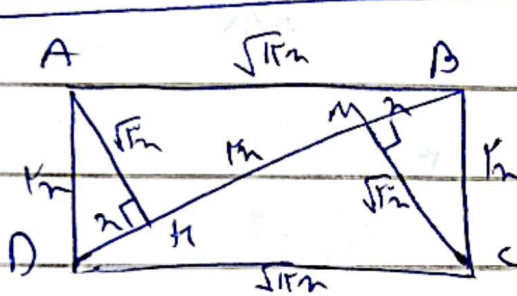
$$BC \parallel DM$$

$$\frac{5.5 + n}{11 + n} = \frac{DM}{CB} = \frac{5.5}{11}$$

$$\frac{5.5 + n}{5.5} = \frac{5.5}{5.5} = 1$$

$$5.5 + n = 5.5$$

$$n = 0 \Rightarrow AE = 5.5$$



$$\frac{S_{ABCD}}{S_{ADM}} = ?$$



$$AM^2 = DM \times BM$$

$$AM^2 = n \times kn = kn^2 \rightarrow AM = \sqrt{kn}$$

$$CM^2 = MB \times MD = n \times kn = kn^2 \rightarrow CM = \sqrt{kn}$$

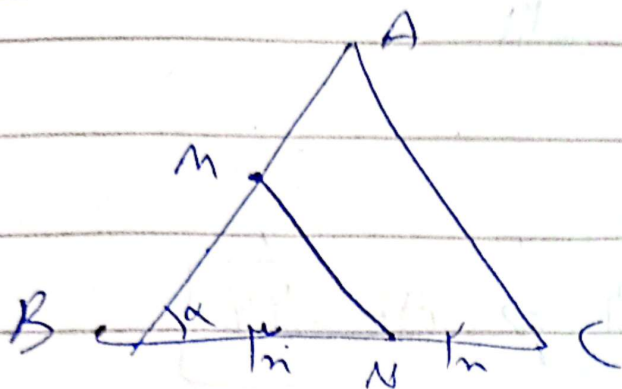
$$AD^2 = BC^2 = (\sqrt{kn})^2 + n^2 = kn + n^2 = kn^2$$

$$AD = BC = kn$$

$$AD^2 + AB^2 = BC^2$$

$$AB^2 = 12n^2 - kn^2 = kn^2 \rightarrow AB = \sqrt{kn}$$

$$\frac{S_{ABCD}}{S_{ADM}} = \frac{\sqrt{kn} \times kn}{\frac{\sqrt{kn} \times n}{2}} = \frac{2\sqrt{kn} \times kn}{\sqrt{kn}} = \frac{2 \times \sqrt{kn} \times kn}{\sqrt{kn}} = 2$$



$$r_{NC} = r_{BN}$$

$$\frac{S_{ABC}}{S_{BMN}} = r$$

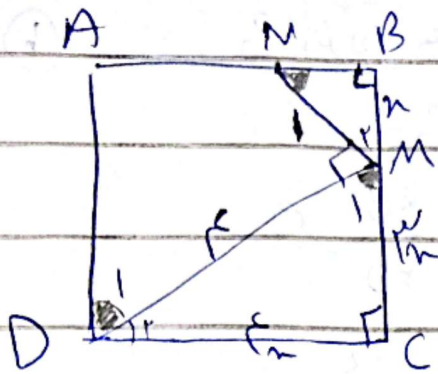
$$\frac{BM}{AM} = ?$$

$$\frac{S_{ABC}}{S_{BMN}} = \frac{AB \times BC \times \sin \alpha}{BM \times BN \times \sin \alpha} = r$$

$$\frac{S_{ABC}}{S_{BMN}} = \frac{AB \times \cancel{BC} \times \cancel{\sin \alpha}}{BM \times \cancel{BN} \times \cancel{\sin \alpha}}$$

$$\frac{r}{1} = \frac{AB}{BM}$$

$$\frac{BM}{AM} = \frac{BM}{AB - BM} = \boxed{\frac{r}{r+1}}$$



مسألة ٩

$$\begin{cases} \hat{m}_1 + \hat{n} = 9 \\ \hat{m}_1 + \hat{m}_2 = 9 \end{cases} \Rightarrow \hat{n} = \hat{m}_1$$

$$\begin{cases} \hat{m}_1 = \hat{D} \\ \hat{n} = \hat{m}_1 \end{cases} \Rightarrow \triangle NBM \sim \triangle MCD$$

$$\frac{MC}{NB} = \frac{CD}{MB} = \frac{MD}{MN}$$

$$\frac{MC}{NB} = \frac{CD}{MB} = \frac{r}{1}$$

$$MD^2 = MC^2 + CD^2 \Rightarrow 14 = (r_n)^2 + \cancel{MC^2}^{(m_n)^2}$$

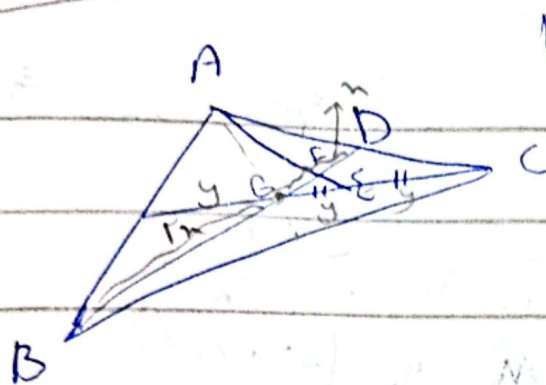
$$14 = 4m^2 + 9n^2$$

$$14 = 10m^2$$

$$\frac{14}{10} = a^2 \Rightarrow n = \frac{r}{a}$$

$$r_n = r \times \frac{r}{a} = \frac{14}{a}$$

$$S_{\square} = \frac{14}{a} \times \frac{14}{a} = \frac{196}{10} = 19.6$$



ب) $\vec{GE} = \vec{EC}$ (مساوی بردارها)

$$\vec{GE} = \vec{EC}$$

$$\frac{BD}{FD} = \rho$$

AGG (مساوی بردارها) $\vec{F}$ (مساوی بردارها) $\vec{GE} = \vec{EC}$ (مساوی بردارها)

AC (مساوی بردارها) GD

$$GF = \frac{F_n}{F} \quad FD = \frac{n}{F}$$

$$\frac{BD}{FD} = \frac{F_n}{\frac{A}{F}} = \frac{F_n \times F}{n} = 9$$