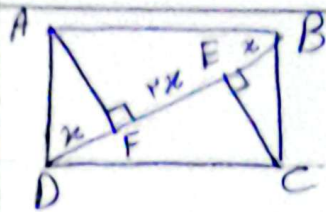
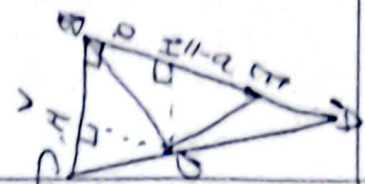


$$BD \text{ : } \Rightarrow DH = DH' = BH = BH' = a \Rightarrow EH = 11 - a$$

$$\Rightarrow DH' = BH \cdot EH = a \times (11 - a) = a^r \Rightarrow 11a = a^r \Rightarrow a = \frac{11}{r} = \Delta, \Delta$$

$$\triangle ADH \sim \triangle ABC \Rightarrow \frac{AH}{AB} = \frac{DH}{BC} \Rightarrow \frac{\Delta, \Delta}{r, \Delta} = \frac{AH}{\Delta, \Delta} \Rightarrow 10, 12 = 1, \Delta AH$$

$$\Rightarrow AH = 12, 1, AE = 12, 1 - \Delta, \Delta = 4, 4$$

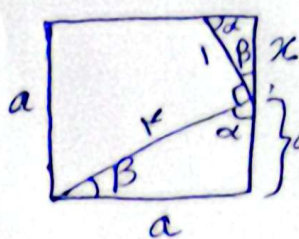
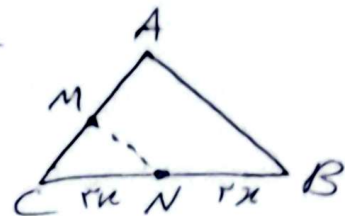


$$BEC \sim BDC \Rightarrow \left. \begin{array}{l} CE = CE \\ BE = \frac{1}{r} BD \end{array} \right\} \frac{S_{BEC}}{S_{BDC}} = \frac{1}{r} \times 1$$

$$\Rightarrow \frac{S_{BEC}}{S_{ABCD}} = \frac{1}{r} \times \frac{1}{r} = \frac{1}{r} \xrightarrow{\text{نسبة}} 1$$

$$\frac{S_{BMN}}{S_{ABC}} = \frac{BM \times BN}{BA \times BC} = \frac{BM}{AB} \times \frac{1}{r} = \frac{1}{r}$$

$$\Rightarrow \frac{BM}{AB} = \frac{\Delta}{9} \Rightarrow \frac{BM}{AM} = \frac{\Delta}{r}$$



$$\frac{y}{a-x} = \frac{x}{a} = \frac{1}{r} \rightarrow a = rx$$

$$a^r + (a-x)^r = 19 \Rightarrow 19x^r + 9x^r = 19$$

$$\Rightarrow x^r = \frac{19}{18} \Rightarrow x = \frac{r}{\Delta}$$

$$\Rightarrow a = rx = \frac{19}{\Delta} \Rightarrow S_{\text{مربع}} = \left(\frac{19}{\Delta}\right)^2 = \frac{361}{18}$$

$$\triangle GDC: EM \parallel GD \xrightarrow{\text{ثبات}} \frac{EC}{EG} = \frac{CM}{DM} \Rightarrow CM = DM = x \Rightarrow AD = 12x$$

$$\triangle AEM: FD \parallel EM \xrightarrow{\text{ثبات}} \frac{AD}{AM} = \frac{FD}{EM} \Rightarrow \frac{12x}{rx} = \frac{FD}{EM} \Rightarrow EM = \frac{r}{12} FD \quad (1)$$

$$\triangle GDC: EM \parallel DG \xrightarrow{\text{ثبات}} \frac{CM}{CD} = \frac{EM}{GD} \Rightarrow GD = 12EM \xrightarrow{(1)} GD = rFD$$

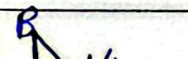
$$\frac{GD}{BD} = \frac{1}{r} \Rightarrow \frac{rFD}{BD} \Rightarrow \frac{FD}{BD} = \frac{1}{9} \rightarrow \frac{BD}{FD} = 9$$

$$\frac{AF}{CF} = \frac{EF}{BF} = \frac{AE}{BC} = \frac{1}{3}$$

$$\left. \begin{aligned} AF=x &\Rightarrow x+3x=3\sqrt{2} \Rightarrow x=\frac{3}{4}\sqrt{2} \\ EF=y &\Rightarrow y+3y=\sqrt{10} \Rightarrow y=\frac{\sqrt{10}}{4} \end{aligned} \right\} \frac{z}{y} = \frac{\frac{3}{4}\sqrt{2}}{\frac{\sqrt{10}}{4}} = \frac{\sqrt{6}}{\sqrt{5}}$$

$$\begin{aligned} \hat{A}\hat{E}\hat{D} = \hat{A}\hat{C}\hat{B} &\Rightarrow \frac{AD}{AB} = \frac{AE}{AC} \Rightarrow \frac{r}{r+1} = \frac{x}{10} \Rightarrow x^r + x - r_0 = 0 \\ &\rightarrow \frac{-1 + \sqrt{11}}{r} = \frac{-1 + 11}{r} = \boxed{10} \\ &\rightarrow \frac{-1 - \sqrt{11}}{r} = -9 \times \overline{00\bar{E}} \end{aligned}$$

$DE \parallel BC \Rightarrow \triangle AED \sim \triangle ABC$ $xy = \Delta x \Rightarrow x = \frac{\Delta}{\Delta} y$
 $\triangle DEH \sim \triangle FHC \Rightarrow \frac{x}{\frac{\Delta}{\Delta} x} = \frac{DE}{FC} \Rightarrow FC = \frac{\Delta}{\Delta} DE$
 $\frac{x}{\Delta x} = \frac{DE}{BC} \Rightarrow \frac{DE}{\frac{\Delta}{\Delta} DE + \Delta} = \frac{1}{\Delta} \Rightarrow \frac{\Delta}{\Delta} DE = \Delta \Rightarrow DE = \frac{\Delta}{\Delta}$
 $BC = \frac{\Delta}{\Delta} \times \frac{\Delta}{\Delta} + \Delta = \frac{\Delta \Delta}{\Delta}$



$$HC = r: \text{فرض} \Rightarrow BH = r_0 - r = 14$$

$$AB^2 = 14 \times r_0 = 3r_0 \Rightarrow AB = \sqrt{3r_0} = 1\sqrt{5}$$

$$AC^2 = r \times r_0 = 10 \Rightarrow AC = \sqrt{10} = r\sqrt{5}$$

$$\frac{AC}{AB} = \frac{r\sqrt{5}}{1\sqrt{5}} = \boxed{\frac{1}{r}}$$

$$\triangle BAF \sim \triangle ECF \rightarrow \frac{BF}{EF} = \frac{AF}{CF} \Rightarrow \frac{9}{x} = \frac{1+x}{1} \rightarrow x(x+1) = 9$$

$$\Rightarrow x = 1 \Rightarrow AF = 1+x = \boxed{2}$$