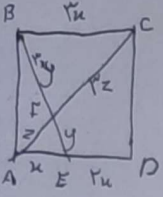


$$BFC \sim AFE \Rightarrow \frac{BF}{FE} = \frac{CF}{AF} = 3 \rightarrow \begin{cases} \triangle BAE = (4y)^2 = 3^2 + 1 \Rightarrow y = \frac{\sqrt{10}}{2} \\ AC = 3\sqrt{2} = 5z \rightarrow z = \frac{3\sqrt{2}}{5} \end{cases} \Rightarrow \frac{y}{z} = \frac{\frac{\sqrt{10}}{2}}{\frac{3\sqrt{2}}{5}} = \frac{\sqrt{5}}{3}$$



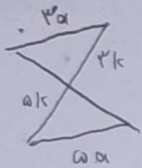
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$$AEO \sim ACB \rightarrow \frac{AO}{AB} = \frac{AE}{AC} \Rightarrow \frac{r}{k+1} = \frac{k}{10} \Rightarrow k^2 + k = 30 \rightarrow k \begin{cases} 5 \\ -6 \end{cases}$$

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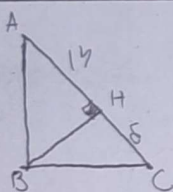
$$k = 3k \xrightarrow{\text{مثلا}} \frac{3\alpha}{3+5\alpha} = \frac{3/k}{9/k} = \frac{1}{3} \rightarrow \alpha = 0,75 \rightarrow BC = 3 + \alpha (0,75) = 2,25$$

$$y = \omega/k$$



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$$\begin{aligned} (AB)^2 &= 14 \times 20 \rightarrow AB = 14\sqrt{5} \\ (BC)^2 &= 8 \times 20 \rightarrow BC = 4\sqrt{10} \end{aligned} \Rightarrow \frac{14\sqrt{5}}{4\sqrt{10}} = 2$$

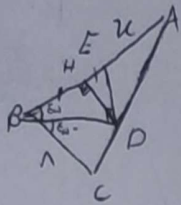


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$$ABF \sim EFC \rightarrow \frac{CF}{AF} = \frac{EF}{BF} \Rightarrow \frac{\lambda}{\lambda+EF} = \frac{EF}{4} \rightarrow (EF)^2 + \lambda(EF) - 4\lambda = 0 \rightarrow EF \begin{cases} 4 \\ -\lambda \end{cases}$$

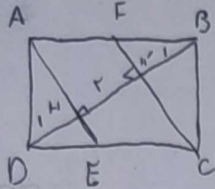
$$AF = x + \lambda = f + \lambda = 12$$

۵



$$DH=BH=EH=\frac{11}{r} \xrightarrow{\text{QWL}} \frac{AH}{AB} = \frac{DH}{BC} \Rightarrow \frac{x+\frac{11}{r}}{x+11} = \frac{\frac{11}{r}}{1} \Rightarrow K=7,4$$

6

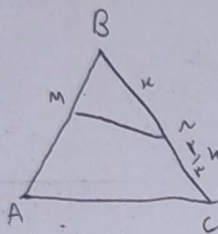


$$AH^r = \sqrt{r} \rightarrow AH = \sqrt{r}, AD^r = (\sqrt{r})^r + 1^r \rightarrow AD = r \rightarrow E^r = r^r + A13^r \rightarrow AB = \sqrt{r}$$

$$AHB \sim DHE \rightarrow \frac{AH}{DH} = \frac{AB}{DE} = \frac{HB}{DH} \rightarrow \frac{\sqrt{r}}{HE} = \frac{r\sqrt{r}}{DE} = \frac{r}{1} \Rightarrow HE = \frac{\sqrt{r}}{r}$$

$$\frac{S_{\text{max}}}{S_{\text{min}} \cdot 2} = \frac{r\sqrt{r} \times r}{\frac{1}{r} \times \frac{\sqrt{r}}{r} \times 1} = 2E$$

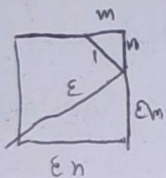
7



$$S_{ABC} = r S_{BMN} \rightarrow \frac{1}{r} A13 \times \frac{\omega}{r} \times \sin B = r \times \frac{1}{r} BM \times \sin B$$

$$\rightarrow \frac{BM}{AB} = \frac{\omega}{9} \rightarrow \frac{BM}{AM} = \frac{\omega}{E}$$

8

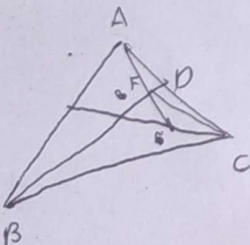


$$Em+n=En \rightarrow Em=En$$

$$(En)^r + (Em)^r = E^r \rightarrow m^r + n^r = 1 \rightarrow (\frac{m}{E})^r + n^r = 1 \rightarrow n^r = \frac{14}{105}$$

$$S = 14 \times \frac{14}{105} = 10,7E$$

9



$$\frac{BG}{GD} = \frac{r}{r} \Rightarrow GFE \sim CFE \rightarrow GF=FC$$

$$\hookrightarrow GD = \frac{1}{r} BD \quad FD = \frac{1}{r} GD \rightarrow FD = \frac{1}{r^2} BD$$

$$\frac{BD}{FD} = 9$$

10