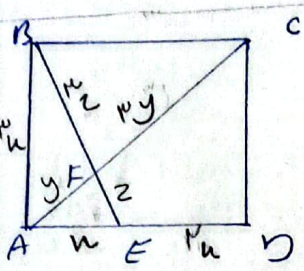


IV, 10

Από το 10: $\frac{AC}{AB} = \frac{1}{2}$

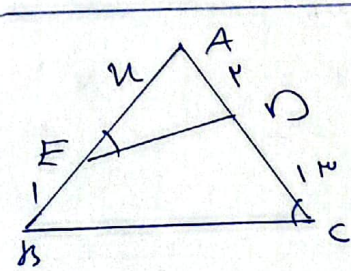


$ED = PAE$
 $\frac{EF}{AF} = ?$

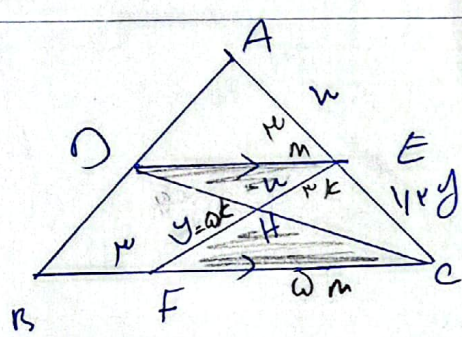
$\frac{FE}{AF} = \frac{\sqrt{1-x^2}}{x} \rightarrow \frac{\sqrt{1-x^2}}{x} = \frac{y}{x} \rightarrow \frac{\sqrt{1-x^2}}{x} = \frac{y}{x}$

$AC \rightarrow \sqrt{1-x^2} = y \rightarrow y = \sqrt{1-x^2}$ (AF)

$BE \rightarrow \sqrt{1-x^2} = z \rightarrow \frac{\sqrt{1-x^2}}{x} = \frac{z}{x}$ (FE)

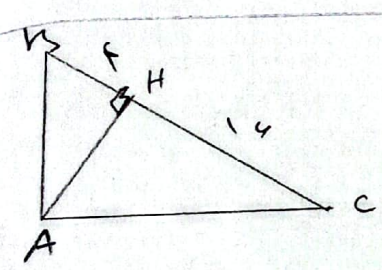


$ABC \sim AED \rightarrow \frac{AB}{AD} = \frac{BC}{ED} = \frac{AC}{AE}$
 $\frac{x+1}{x} = \frac{1}{x} \rightarrow x^2 = x(x+1) \rightarrow x = 1$

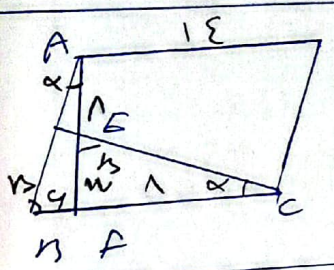


$xy = 2x \rightarrow x = 2y / y = 2$
 $CHF \sim DHE \rightarrow \frac{HE}{HF} = \frac{DE}{DF} \rightarrow DE = 2m$

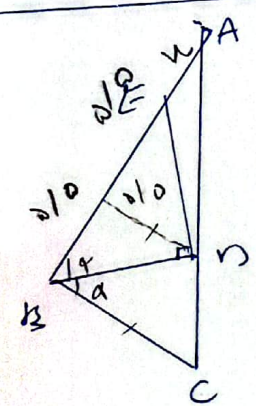
$DE \parallel BC \rightarrow \frac{DE}{BC} = \frac{AE}{AC} = \frac{x}{x+y} = \frac{1}{x} \rightarrow m = 1/x$
 $BC = 2m + x = 2/x + x$



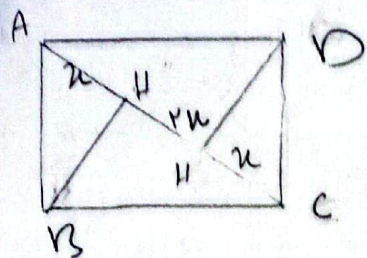
$AB^2 = BH \cdot BC = 1$
 $AC^2 = CH \cdot BC = 4$
 $\frac{AC^2}{AB^2} = 4 \rightarrow \frac{AC}{AB} = 2$



$CEF \sim AEF \rightarrow \frac{y}{x} = \frac{1}{x+y} \rightarrow x = 1$
 $AE = 1/2$



$\frac{x + 1/x}{x+1} = \frac{1}{1} \rightarrow x = 1/4$



$$AB^2 = u \cdot 8u$$

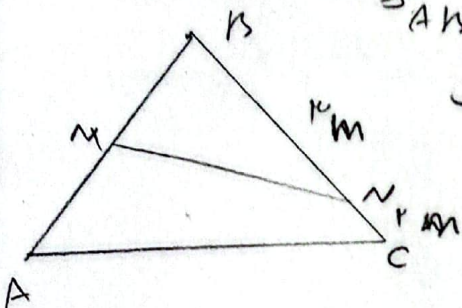
$$BC^2 = 4u \cdot 4u$$

$$BH^2 = u \cdot 4u$$

$$\frac{S_{ABCD}}{S_{ABH}} = \frac{BC \times AB}{BH \times 2 \times AB} \rightsquigarrow \frac{\sqrt{16} u \times 4u}{\sqrt{4u \cdot u} \times 10}$$

$$\frac{r_{AB}}{r_{BC}} = 1$$

1



$$S_{ABC} = \frac{1}{2} BC \cdot AB \sin B$$

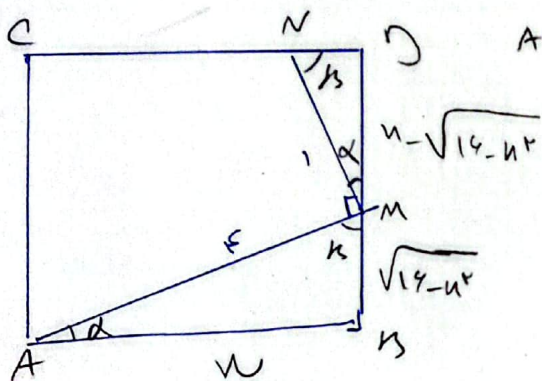
$$S_{MNC} = \frac{1}{2} MN \cdot CN \sin B$$

$$\frac{1}{2} BC \cdot AB \sin B = u \times \frac{1}{2} MN \times CN \sin B$$

$$\omega MN \times AB = u (MN) \times CN \rightarrow \frac{MN}{AB} = \frac{u}{9}$$

$$\frac{MN}{AB - MN} = \frac{1}{10}$$

4



$$AMN \sim NDM \rightarrow \frac{MN}{AB} = \frac{ND}{MK} = \frac{AM}{NM}$$

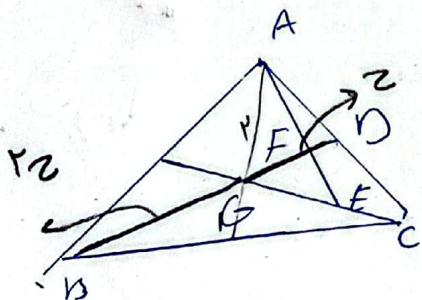
$$\frac{u - \sqrt{14 - u^2}}{\sqrt{14 - u^2}} = \frac{1}{5}$$

$$\frac{u}{\sqrt{14 - u^2}} = \frac{1}{5} \rightarrow u = \frac{1}{5} \sqrt{14 - u^2}$$

$$14u^2 = 14(14 - u^2)$$

$$14u^2 = 14 \times 14 \rightarrow u^2 = \frac{14 \times 14}{14} = 14$$

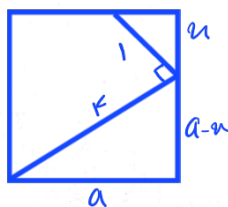
10



$$\frac{BD}{FD} = \frac{u_2}{\frac{1}{9}u_2} = 9$$

$$BG = ry, GD = y \rightarrow BD = ry$$

$$\left. \begin{array}{l} GF = \frac{ry}{2} \\ FD = \frac{1}{2}y \end{array} \right\} \rightarrow \frac{BD}{FD} = \frac{ry}{\frac{1}{2}y} = 9$$



$$\frac{y}{a-n} = \frac{a}{a} = \frac{1}{F} \rightarrow \left. \begin{array}{l} a - n = ry \\ a - n = ry \end{array} \right\}$$

$$F_n - n = ry \rightarrow u = \frac{ry}{F}$$

$$S_{\square} = a^2 = \frac{ry^2}{F^2}$$

$$F = (a-n) + a \rightarrow u = \frac{F}{a}, a = \frac{14}{a}$$

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