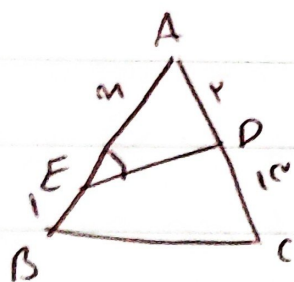


$\triangle ADC \Rightarrow \sqrt{9m^2 + 9m^2} = 3\sqrt{2}m = AC$ ①
 $\triangle ABE \Rightarrow \sqrt{9m^2 + m^2} = \sqrt{10}m = BE$

$\triangle AFE \sim \triangle CFB \rightarrow \frac{AF}{CF} = \frac{FE}{FB} = \frac{AE}{BC} = \frac{m}{2m} = \frac{1}{2}$

$AF = y \rightarrow y + 2y = 3\sqrt{2}m \rightarrow y = \frac{\sqrt{2}}{3}m$
 $EF = z \rightarrow 2z + z = \sqrt{10}m \rightarrow z = \frac{\sqrt{10}}{3}m$

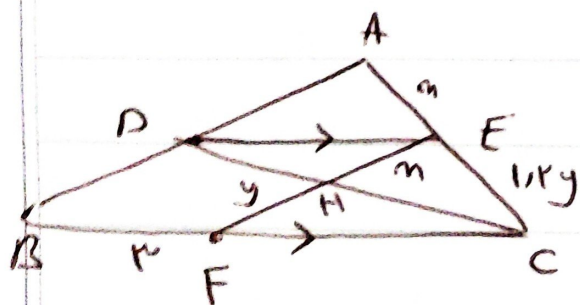
$\Rightarrow \frac{EF}{AF} = \frac{\frac{\sqrt{10}}{3}m}{\frac{\sqrt{2}}{3}m} = \frac{\sqrt{5}}{1}$



$\triangle AED \sim \triangle ACB$
 $\hat{A} = \hat{A}$

$\frac{AE}{AC} = \frac{ED}{BC} = \frac{AD}{AB} \rightarrow \frac{m}{10} = \frac{y}{m+1}$

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



$ABC \rightarrow \frac{AE}{AC} = \frac{DE}{BC} \rightarrow$

$\frac{m}{m+1+y} = \frac{DE}{m+1} \Rightarrow$

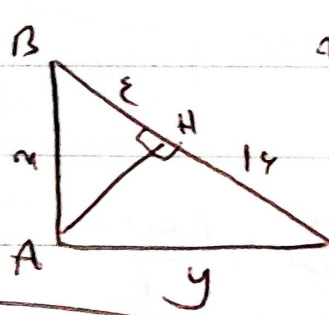
$DE = m + FC$ ①

$$DE \parallel FC \Rightarrow \frac{DE}{FC} = \frac{EH}{HF} \rightarrow \frac{DE}{FC} = \frac{m}{y} = \frac{x}{\omega} \rightarrow$$

$$\triangle DEF \sim \triangle FCH \quad (1)$$

$$(1), (2) \rightarrow m + FC = m \left(\frac{\omega}{\omega} \right) FC \Rightarrow m + FC = \frac{9}{\omega} FC \rightarrow$$

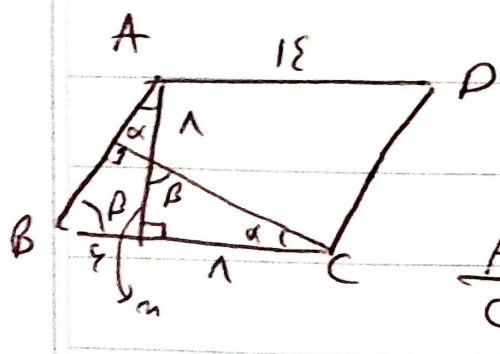
$$\rightarrow \frac{x}{\omega} FC = m \rightarrow FC = m, \omega \quad BC = BF + FC = \underline{9, \omega}$$



$$m^2 = BH \cdot BC \rightarrow m = \sqrt{x \times \omega} = \sqrt{10} \quad (5) \quad (2)$$

$$y^2 = CH \cdot BC \rightarrow y = \sqrt{19 \times \omega} = \sqrt{190}$$

$$\frac{y}{m} = \frac{\sqrt{190}}{\sqrt{10}} = \underline{4} \quad \left(\frac{1}{4} \right)$$



$$\hat{F} = \hat{F} = 90^\circ$$

$$\hat{ABF} = \hat{FEC} \rightarrow \triangle ABF \sim \triangle CEF$$

$$\frac{AF}{CF} = \frac{BF}{EF} \rightarrow \frac{m+1}{1} = \frac{4}{n}$$

$$m^2 + 1m - 4 = 0 \quad (m+1)(m-4) = 0 \rightarrow \underline{m=4}$$

$$AF = m + AE = 4 + 1 = \underline{5}$$

اگر سینه ز BD زاویه B

EDB $\rightarrow 2\alpha = 90 \rightarrow$ زاویه در زاویه α متقابل

ب $\alpha = F_1$ و $BC \parallel OP$ و BD و BC موازی

زاویه D نیز 2α است

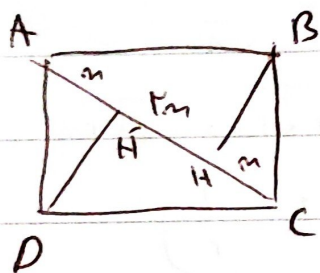
$$\text{جواب} \Rightarrow \frac{AO}{AB} = \frac{OP}{BC}$$

$$m^2 = 2.1 \times 0.1 \rightarrow m = 0.1$$

$$\frac{y+0.5}{y+11} = \frac{11}{n} \rightarrow$$

$$14y + 11 = 11y + 121$$

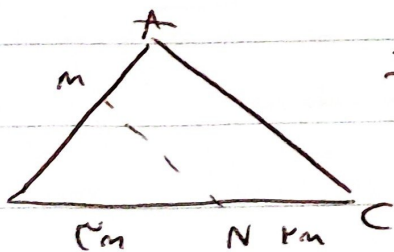
$$3y = 110 \Rightarrow y = \frac{110}{3}$$



$$S_{BHO} = \frac{m \times BH}{2} \quad S_{ABC} = \frac{BH \times em}{2} \quad (V)$$

$$S_{\square} = S_{ABC} + S_{ADC} \Rightarrow BH \times em$$

$$\frac{S_{\square}}{S_{BHO}} = \frac{BH \times em}{\frac{m \times BH}{2}} = 2$$



$$\frac{S_{ABC}}{S_{AMN}} = \frac{\frac{1}{2} \times AB \times BC \times \sin B}{\frac{1}{2} \times BM \times BN \times \sin B} = 4 \quad (5) \quad (2)$$

$$\frac{AB \times m}{BM \times n} = \frac{4}{1}$$

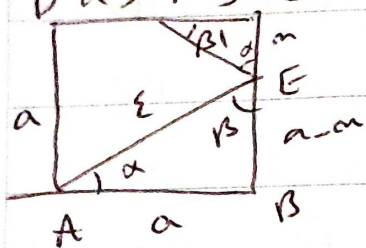
$$\frac{AB \times m}{BM \times n} = 4 \rightarrow \frac{AB}{BM} = \frac{4}{m}$$

$$\frac{AM}{BM} = \frac{4}{m} \rightarrow \frac{BM}{AM} = \frac{m}{4}$$

Subo

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$DEC \sim EAB \rightarrow \frac{DC}{EB} = \frac{EC}{AB} = \frac{DE}{EA}$
(4)



$\Rightarrow \frac{y}{a-m} = \frac{m}{a} = \frac{1}{x} \rightarrow \begin{aligned} a &= xm \\ a-m &= xy \end{aligned}$

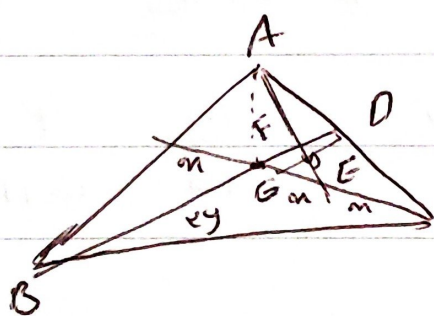
$\rightarrow xm = xy \quad \frac{m}{y} = \frac{x}{a}$

(5)

فیثاغورث $ABE \rightarrow 14 = a^2 + (a-m)^2 \rightarrow 14 = 14m^2 + 9m^2$

$m^2 = \frac{14}{20} \rightarrow m = \frac{x}{a} \quad a = xm \quad a = \frac{14}{a}$

حاصل $a^2 = \frac{14 \times 14}{20 \times 20} = \frac{204}{20} = 10.2$



(1) G محل برخورد میانه‌های مثلث ABC است

میانه‌ها یکدیگر را ۲:۱ نسبت به ۲ قطع می‌کنند

در مثلث AGC ، AE ، GD میانه و همرا

نه F قطع می‌کنند

$GF = \frac{1}{3}y \quad FD = \frac{1}{3}y \quad \frac{DF}{FD} = \frac{y}{\frac{1}{3}y} = 3$