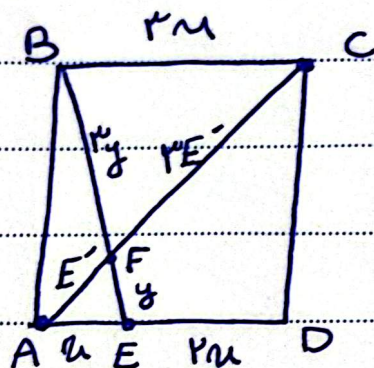




$$\frac{EF}{AF} = \frac{p}{q}$$

$$PAE = ED$$

(1)

$$\Delta ADC \Rightarrow \sqrt{m^2 + n^2} = \sqrt{p^2 + q^2} = AC$$

$$\Delta ABE \Rightarrow \sqrt{m^2 + n^2} = \sqrt{p^2 + q^2} = BE$$

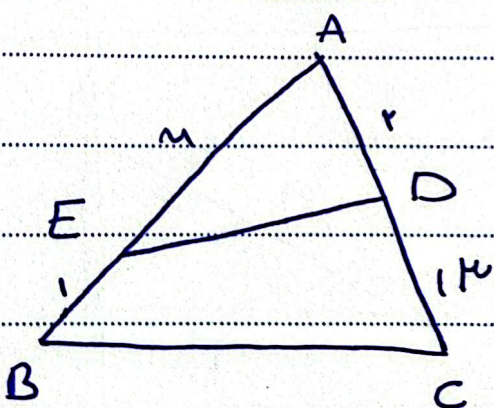
$$\Delta AFE \sim \Delta CFB \Rightarrow \frac{AF}{EF} = \frac{FB}{FE} = \frac{AE}{BE} = \frac{m}{n} = \frac{1}{k}$$

$$EF = y \Rightarrow y + ky = \sqrt{m^2 + n^2} \Rightarrow y = \frac{\sqrt{m^2 + n^2}}{k+1}$$

$$AF = E' \Rightarrow E' + kE' = \sqrt{m^2 + n^2}$$

$$E' = \frac{\sqrt{m^2 + n^2}}{k+1}$$

$$\frac{EF}{AF} = \frac{\frac{\sqrt{m^2 + n^2}}{k+1}}{\frac{\sqrt{m^2 + n^2}}{k+1}} = \frac{\sqrt{m^2 + n^2}}{\sqrt{m^2 + n^2}}$$



$$\angle AED = \angle ACB$$

(2)

$$\left. \begin{array}{l} \angle AED = \angle ACB \\ \angle A = \angle A \end{array} \right\} \Rightarrow \Delta AED \sim \Delta ACB$$

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

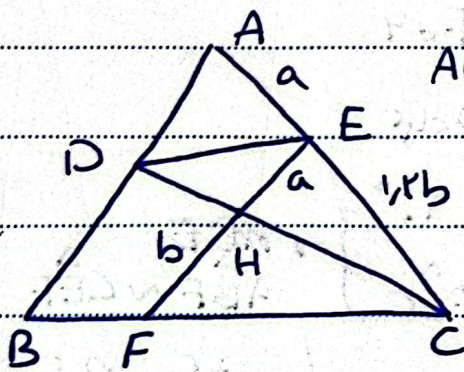
$$\frac{m}{10} = \frac{p}{n+1} \Rightarrow m^2 + n^2 = p^2 \Rightarrow m^2 + n^2 - p^2 = 0$$

$$(m+4)(m-0) = 0$$

$$m = -4 \rightarrow \text{reject}$$

$$m = 0 \rightarrow \text{reject}$$

3) $DE \parallel BC$, $DE = 3m$, $BF = 4$ اندازه BC کجاست؟



$$\triangle ABC : DE \parallel BC \quad \frac{AE}{AC} = \frac{DE}{BC} \rightarrow \frac{a}{a+b} = \frac{3m}{4+b}$$

$$\frac{a}{a+b} = \frac{3m}{4+b} \rightarrow \frac{DE}{FC+FC} = \frac{a}{a+FC}$$

$$3m \cdot DE = FC + FC$$

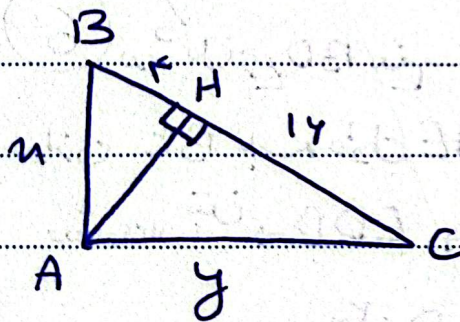
$$DE \parallel FC \Rightarrow \frac{DE}{FC} = \frac{EH}{HF} \rightarrow \frac{DE}{FC} = \frac{a}{b} = \frac{3m}{4}$$

$$\triangle DE \sim \triangle FC$$

$$1, 2 \rightarrow FC = \frac{4}{3} \cdot 3m \rightarrow FC = 4m$$

$$BC = BF + FC = 4 + 4 = 8m$$

$$BC = BF + FC \rightarrow 4 + 4 = 8m$$



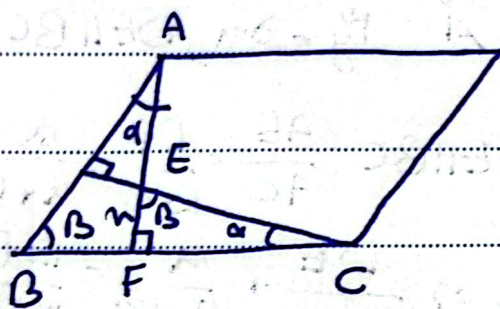
$$m \cdot BH \times BC \rightarrow m = \sqrt{14}$$

$$y \cdot r = CH \times BC \rightarrow y = \sqrt{14}$$

$$\frac{y}{m} = \sqrt{14} \rightarrow r$$

$$\frac{y}{m} = r$$

$$\frac{m}{y} = \frac{1}{r}$$



5

$$AE = 1$$

$$BF = 4$$

$$AD = 12$$

$$\angle AEF = \angle BFC = 90^\circ$$

$$\angle AFE = \angle BCF$$

$$\triangle AFE \sim \triangle BFC$$

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

$$AF + AE = 12$$

$$f + 1 \rightarrow$$

$$m^2 + 11m - 48 = 0$$

$$(m + 12)(m - 4) = 0$$

$$m = -12 \rightarrow \text{غیر ممکن}$$

$$m = 4 \rightarrow \text{مطلوبه}$$

6 در مثل زیر BD منصف است از BE ارتفاع دارد بر ضلع BE



موازی BC با E طول AE را بیابید

مسئله 1: $2\alpha = 90^\circ \rightarrow \alpha = 45^\circ \rightarrow \angle EDB = 90^\circ$

$BC \parallel OD, BD \perp OD \rightarrow \angle D = 2\alpha$

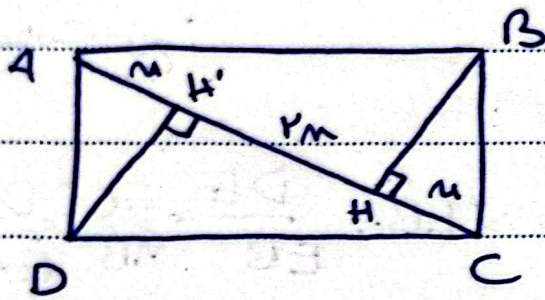
$$m^2 - 5,5x + 0,8 \rightarrow m = 5,5$$

$$\frac{AO}{AB} = \frac{OD}{BC} \rightarrow$$

$$\frac{y + 4,5}{y + 11} = \frac{11}{12} \rightarrow 12y + 54 = 11y + 132$$

$$y = 78$$

$$y = \frac{78}{2} \rightarrow 39$$



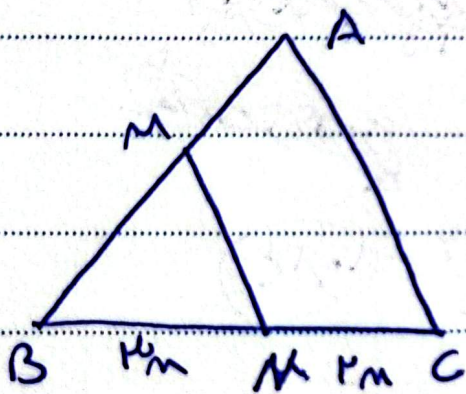
$$S_{BHC} = \frac{n \times BH}{2}$$

(7)

$$S_{ABC} = \frac{BH \times m}{2}$$

$$S_{\text{مربع}} = S_{ABC} + S_{ADC} = BH \times m$$

$$\frac{S_{\text{مربع}}}{S_{BHC}} = \frac{BH \times m}{\frac{n \times BH}{2}} \rightarrow \frac{m}{n} = 1$$

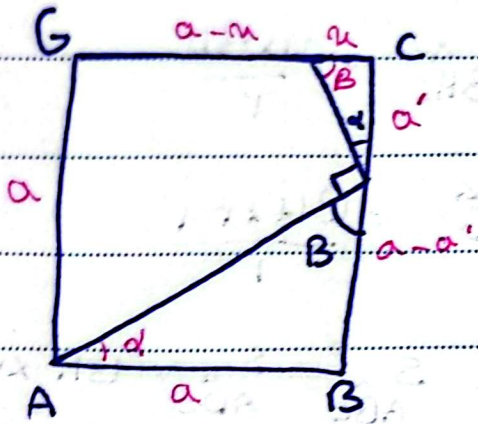


$$\frac{S_{ABC}}{S_{BMN}} = \frac{\frac{1}{2} \times AB \times BC \times \sin B}{\frac{1}{2} \times BM \times BN \times \sin B}$$

$$\frac{AB \times BC}{BM \times BN} = 4$$

$$\frac{AB}{BM} = \frac{4}{1} \rightarrow \frac{AB - BM}{BM} = \frac{3}{1} \Rightarrow \frac{3}{1} = \frac{AM}{BM}$$

$$\frac{BM}{AM} = \frac{1}{3} = 1/3$$



مساحت مربع

(9)

$$\triangle DEC \sim \triangle EBA \quad \frac{DE}{EB} = \frac{EC}{AB} = \frac{DE}{EA}$$

$$\frac{M}{a-a'} = \frac{a'}{a} \cdot \frac{1}{\epsilon} \rightarrow a = \frac{a'}{\epsilon} \rightarrow a - a' = \frac{a'}{\epsilon}$$

$$F_m - m < r_y$$

$$F_m < r_y \rightarrow \frac{M}{y} < \frac{r}{\mu}$$

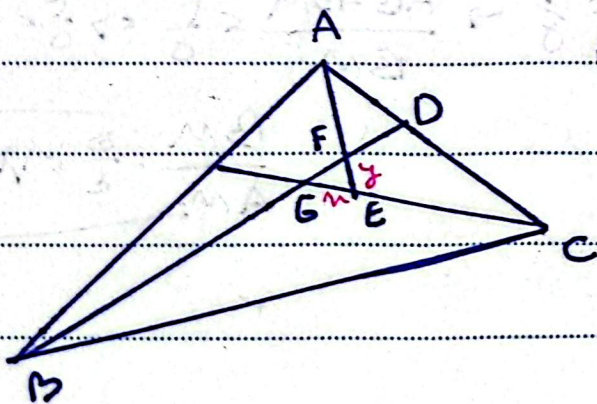
$$ABE \rightarrow 14a' + (a-a')^2 \rightarrow 14 = 14a' + 9a'^2$$

$$a' = \frac{14}{10} \quad a' = \frac{14}{10}$$

$$a = \frac{14}{10} / a = \frac{14}{10}$$

$$S_{pr} = a^2 = \frac{14 \times 14}{10} \rightarrow \frac{196}{10} = (10, 28)$$

(10)



$$\triangle ABC \rightarrow AE, GE \rightarrow \text{new}$$

$$GF = \frac{r}{\mu} y \quad FD = \frac{1}{\mu} y$$

$$\frac{BD}{FD} = \frac{r_y}{\frac{1}{\mu} y} = 9$$