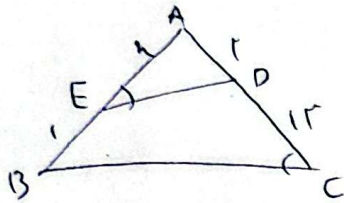


$$BFC \sim AFE \Leftrightarrow \begin{cases} \hat{C} = \hat{A} \\ \hat{F}_1 = \hat{F}_2 \end{cases}$$

$$AC = \sqrt{9+9} = 3\sqrt{2} = 3y \Rightarrow y = \frac{3\sqrt{2}}{3} = \sqrt{2}$$

$$BE = \sqrt{9+1} = \sqrt{10} = 2x \Rightarrow x = \frac{\sqrt{10}}{2}$$

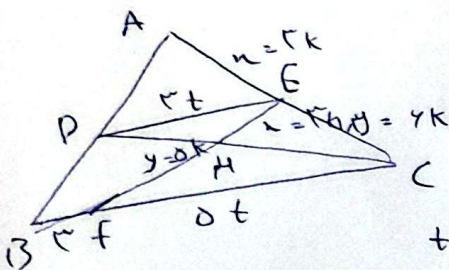
$$\frac{x}{y} = \frac{\frac{\sqrt{10}}{2}}{\sqrt{2}} = \frac{\sqrt{10}}{2\sqrt{2}} = \frac{\sqrt{5}}{2}$$



$$ADE \sim ABC \Rightarrow \begin{cases} \hat{E} = \hat{C} \\ \hat{A} = \hat{A} \end{cases}$$

$$\frac{3}{x+1} = \frac{x}{10} \Rightarrow x(x+1) = 30$$

$$x = 5$$



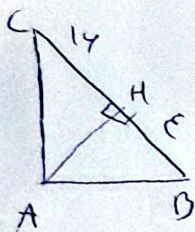
$$\frac{3y}{10} = \frac{\partial x}{\partial t} \Rightarrow \frac{y}{5} = \frac{x}{3} = k$$

$$\Rightarrow x = 3k \quad y = 5k$$

$$\frac{3t}{3+5k} = \frac{3k}{3+5k} \Rightarrow 9t = 3+5k$$

$$t = \frac{3}{5} = 0.6$$

$$BC = 3 + 5 \times 0.6 = 6$$



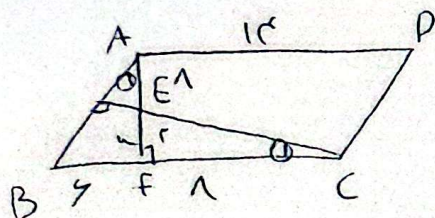
$$BC = 5$$

$$HB = 3$$

$$AB^2 = HB \times BC = 3 \times 5 = 15 \Rightarrow AB = \sqrt{15}$$

$$AC^2 = CH \times BC = 4 \times 5 = 20 \Rightarrow AC = \sqrt{20} = 2\sqrt{5}$$

$$\frac{AC}{AB} = \frac{2\sqrt{5}}{\sqrt{15}} = \frac{2}{\sqrt{3}}$$



$$\hat{A}_1 = \hat{C}_1 \quad \left. \begin{matrix} E_1 \text{ هردو قائمه} \\ E_2 \end{matrix} \right\} \Rightarrow ABF \sim EFC$$

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

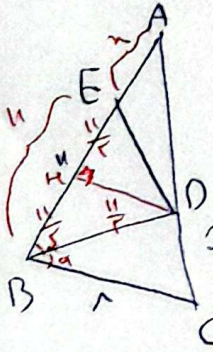
$$\frac{FC}{AF} = \frac{EF}{BF} \Rightarrow \frac{4}{4+x} = \frac{x}{3}$$

$$4(3) + 4x = x^2 \Rightarrow (x+12)(x-6) = 0 \Rightarrow x = 6$$

$$AF = 4 + 6 = 10$$

$$19n + 88 = 11n + 141 \quad 8n = 53 \quad n = 9,4$$

عاریض فضل الکی



$$DH \parallel BC, H = 90^\circ \Rightarrow \hat{B} = 90^\circ \quad BD = DE \quad \alpha = 50^\circ$$

بند دس الساتر
دست الزايع

$$BD = DE$$

DH - ميان دواړو

$$BH = EH = \frac{11}{2}$$

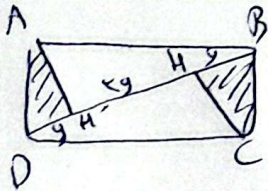
$$DH \parallel BC$$

$$\frac{AH}{AD} = \frac{DH}{BC}$$

$$\frac{n+11}{n+11} = \frac{11}{n}$$

$$DH = \frac{11}{2}$$

نيلو - نصف
دایره د
نيلو - نصف



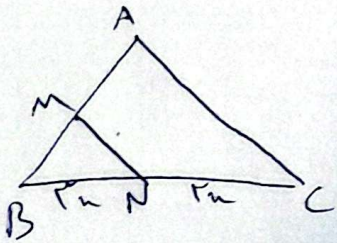
$$h^2 = y \times 2y \quad h = \sqrt{2}y$$

$$S_{\square} = 2 \times S_{\triangle ABD} = 2 \times \frac{1}{2} \times \frac{2y}{2} = \sqrt{2}y \times \frac{2y}{2}$$

$$= \sqrt{2}y^2 \quad (I)$$

$$S_{\triangle} = \frac{h \times y}{2} = \frac{\sqrt{2}y^2}{2} \quad (II)$$

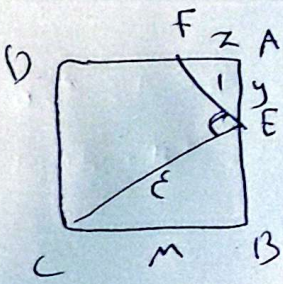
$$\frac{(I)}{(II)} = \frac{\sqrt{2}y^2}{\frac{\sqrt{2}y^2}{2}} = 2$$



$$\frac{S_{BMN}}{S_{ABC}} = \frac{BM \times BN}{BA \times BC} = \frac{BM}{AB} \times \frac{BN}{AC} = \frac{1}{9}$$

$$\frac{BM}{AB} = \left(\frac{1}{3} \right)^2 = \frac{1}{9}$$

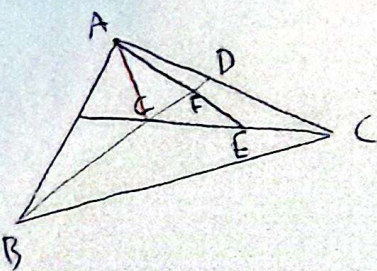
$$\frac{BM}{AM} = \frac{1}{2} = \frac{1}{2}$$



$$A \hat{E} F \sim B \hat{C} E$$

$$\frac{z}{m-y} = \frac{y}{m} = \frac{1}{2} \quad y = \frac{m}{2}, \quad n = \frac{3m}{2}$$

$$B \hat{C} E = m^2 + \left(\frac{3}{2} \right)^2 = 10 \quad m^2 = \frac{16 \times 16}{25} = 10,24$$



$$FD = \frac{1}{2} GD$$

$$D = \frac{1}{2} BD$$

براساس متن سوال
هم مرکز ثقل مثلث

AGC : ABC
مرکز ثقل مثلث
BD = 9
FP