c) In Δ's EBD and EAC we have:

- $E\hat{B}D = E\hat{C}A$ (proved).
- $B\hat{E}D = A\hat{E}C$ (common angle)

→ Thus Δ's EBD and EAC are similar by Angle-Angle postulate.

Ratio of similarity:

$$\begin{array}{c|c} \Delta EBD & \overset{①}{\frac{EB}{EC}} = \overset{②}{\frac{ED}{EA}} = \overset{③}{\frac{BD}{CA}} = K_1 \\ \Delta ECA & \end{array}$$

From ratios ① & ③ we get:

$$\frac{EB}{EC} = \frac{BD}{CA}.$$

→ Thus $EB \times CA = EC \times BD$.

4a) $\vec{CM} = \vec{AB} + \vec{AC}$ (given)

and $\vec{AB} + \vec{AC} = \vec{AF}$ (sum of vectors having same origin where F is the 4^{th} vertex of parm ABFC)

So, $\vec{AF} = \vec{CM}$.

b) $\vec{CM} = \vec{AF}$ (proved)

(γ) is a circle of diameter [BC] and center O (given)

So, O is mid pt of [BC]

then, O is mid pt of [AF] (diagonals of a parm)

Thus, $\vec{CM} = 2\vec{AO}$.

→ $\vec{CM} = 2\vec{AO}$ (proved)

And, $2AO = BC = 10$ cm (radius & diameter)

Also C is a fixed pt.

Thus, as A varies on (γ) M describes a circle of center C & radius $CM = 2AO = 10$ cm.

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