$\frac{5}{4}x - 1 = 0 \quad | \cdot \frac{4}{5} \Leftrightarrow x - \frac{4}{5} = 0 \Leftrightarrow x = \frac{4}{5} \Rightarrow y = \frac{4}{5}$

Vast. $\frac{AE}{EC} = \frac{x}{1-x} = \frac{\frac{4}{5}}{\frac{1}{5}} = \frac{4}{5} \cdot \frac{5}{1} = \frac{4}{1} = \underline{4:1}$

$\frac{BE}{ED} = \frac{y}{1-y} = \frac{\frac{4}{5}}{\frac{1}{5}} = \underline{4:1}$

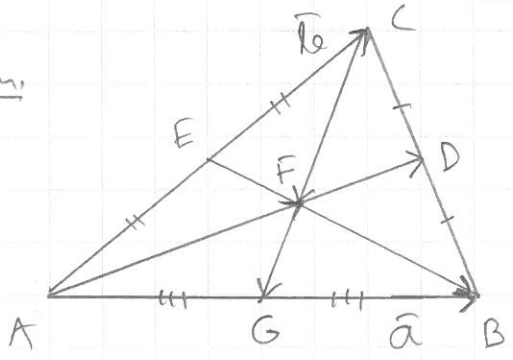
TAI: $\triangle ABE \sim \triangle CDE$ (kk)

1° $\sphericalangle AEB = \sphericalangle CED$ (kärkikulmat)

2° $\sphericalangle B = \sphericalangle D$ (samankohtaiset kulmat, $AB \parallel DC$)

Mitkä oli $k = \frac{4}{1} = \frac{AE}{EC} = \frac{BE}{ED}$

Esim.



$\vec{AB} = \vec{a}$, $\vec{AC} = \vec{b}$

$\begin{cases} \vec{AD} = \vec{AC} + \vec{CD} = \vec{b} + \frac{1}{2}\vec{CB} = \vec{b} + \frac{1}{2}(-\vec{b} + \vec{a}) = \frac{1}{2}\vec{a} + \frac{1}{2}\vec{b} \\ \vec{AF} = x\vec{AD} = x(\frac{1}{2}\vec{a} + \frac{1}{2}\vec{b}) \end{cases}$

$\begin{cases} \vec{EB} = \vec{EA} + \vec{AB} = -\frac{1}{2}\vec{b} + \vec{a} \\ \vec{FB} = y\vec{EB} = y(-\frac{1}{2}\vec{b} + \vec{a}) \end{cases}$

Kierretaan $A \to F \to B \to A$

$\vec{AF} + \vec{FB} + \vec{BA} = \vec{0}$

$\Leftrightarrow x(\frac{1}{2}\vec{a} + \frac{1}{2}\vec{b}) + y(-\frac{1}{2}\vec{b} + \vec{a}) - \vec{a} = \vec{0}$

$\Leftrightarrow (\underline{\frac{1}{2}x + y - 1})\vec{a} + (\underline{\frac{1}{2}x - \frac{1}{2}y})\vec{b} = \vec{0} = \underline{0} \cdot \vec{a} + \underline{0} \cdot \vec{b}$

Koska $\vec{a} \nparallel \vec{b}$

$\Rightarrow \begin{cases} \frac{1}{2}x + y - 1 = 0 \\ \frac{1}{2}x - \frac{1}{2}y = 0 \quad | \cdot (-1) \end{cases}$

$\frac{3}{2}y - 1 = 0 \Leftrightarrow y = \frac{2}{3} \Rightarrow x = y = \frac{2}{3}$

$\begin{cases} \vec{CG} = \vec{CA} + \vec{AG} = -\vec{b} + \frac{1}{2}\vec{a} \\ \vec{CF} = \vec{CA} + \vec{AF} = -\vec{b} + \frac{2}{3}(\frac{1}{2}\vec{a} + \frac{1}{2}\vec{b}) = \frac{1}{3}\vec{a} - \frac{2}{3}\vec{b} \end{cases}$

$\Rightarrow \vec{CF} = \frac{2}{3}\vec{CG}$

Siis: Kolmion keskijanat leikkaavat toisensa samassa pisteessä (F) ja leikkaavat toisensa kärjestä lukien suhteessa $\frac{\frac{2}{3}}{\frac{1}{3}}$

$= \frac{2}{3} \cdot \frac{3}{1} = \frac{2}{1} = 2:1$ (vert. MAA3)