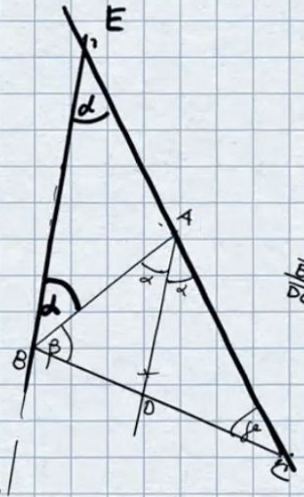
$\triangle CAD \approx \triangle CEB$

$$\frac{CA}{CD} = \frac{AE}{DB}$$

$\overline{FB} \parallel \overline{AD}$

$$\overline{AB} = \overrightarrow{EA}$$




$$\frac{\overline{BD}}{\overline{DC}} = \frac{\overline{AB}}{\overline{CA}}$$

$$\frac{\overline{CA}}{\overline{CD}} = \frac{\overline{AB}}{\overline{DB}}$$

$$\frac{\overline{CA}}{\overline{AB}} = \frac{\overline{CD}}{\overline{DB}}$$

$$\frac{\overline{AB}}{CA} = \frac{\overline{DB}}{\overline{CD}} = \frac{\overline{BD}}{\overline{DC}}$$

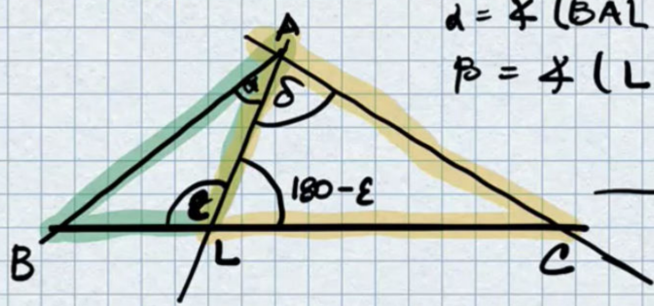
$$\frac{\overline{CA}}{\overline{AB}} = \frac{\overline{CD}}{\overline{DB}}$$

$$\frac{\overline{AB}}{CA} = \frac{\overline{DB}}{\overline{CD}} = \frac{\overline{BD}}{\overline{DC}}$$

Teorema Generalizado: $\quad \text{sen}\,\varepsilon = \text{sen}\,(180-\varepsilon)$

$\alpha = \measuredangle(BAL)$

$\beta = \measuredangle(LAC)$





A demostrar: $\dfrac{\overline{BL}}{\overline{LC}} = \dfrac{AB\,\text{sen}\,\alpha}{CA\,\text{sen}\,\delta}$

Usando ley de senos:

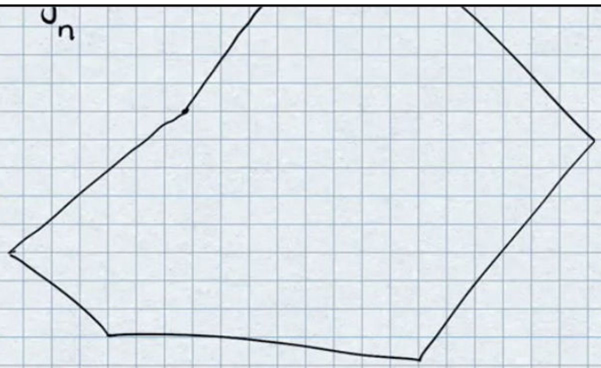
$\triangle ABL \Rightarrow \dfrac{BL}{AB} = \dfrac{\text{sen}\,\alpha}{\text{sen}\,\varepsilon}$

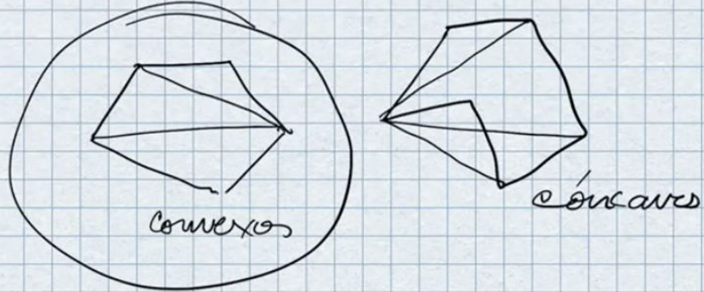
Recordatorio:
$\text{sen}\,\varepsilon = \text{sen}\,(180-\varepsilon)$

$\triangle ALC \Rightarrow \dfrac{LC}{CA} = \dfrac{\text{sen}\,\delta}{\text{sen}\,(180-\varepsilon)}$

Despejamos:
$$\left.\begin{aligned} BL &= \frac{AB\cdot \text{sen}\,\alpha}{\text{sen}\,\varepsilon} \\ LC &= \frac{CA\cdot \text{sen}\,\delta}{\text{sen}\,(180-\varepsilon)} \end{aligned}\right\} \text{ dividimos}$$

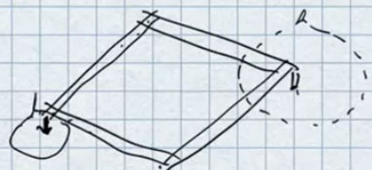
$$\frac{\overline{BL}}{\overline{LC}} = \frac{AB\,\dfrac{\text{sen}\,\alpha}{\text{sen}\,\varepsilon}}{\dfrac{CA\cdot\text{sen}\,\delta}{\text{sen}\,(180-\varepsilon)}} = \frac{\overline{AB}\,\text{sen}\,\alpha}{CA\,\text{sen}\,\delta}$$






Paréntesis: Tarea (2) (Jueves 29.7.2021)

# Pantógrafos:



Construir un pantógrafo.

2 3 4

$\frac{1}{2}$ $\frac{1}{3}$ $\frac{1}{4}$

---

## Propiedades:

A, B, C colineales  A, B, C $\in$ lado de un polígono
Si aplicamos una Homotecia $\Rightarrow$ A', B', C' (imágenes de A, B, C) también son colineales.
$l(A,B,C) \parallel l(A',B',C')$

A, B, C colineales  A, B, C $\in$ lado de un polígono
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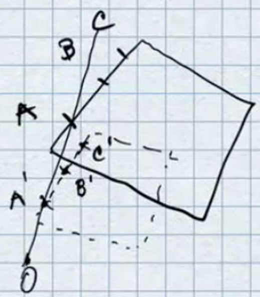



i) Si A, B, C son colineales
A', B', C' " "
donde A', B', C' son las imágenes correspondientes de una Homotecia.

ii) $l(A,BC) \parallel l(A'B'C')$

$\rightarrow -5.81x - 2.81y = 30.12$

$F = (-2.6, -5.23)$

$F' = \text{Homotecia}(F, 2, A)$
$\rightarrow (-1.14, -4.91)$

$E' = \text{Homotecia}(E, 2, A)$
$\rightarrow (-3.97, 0.7)$

$C' = \text{Homotecia}(C, 2, A)$
$\rightarrow (1.66, -10.91)$

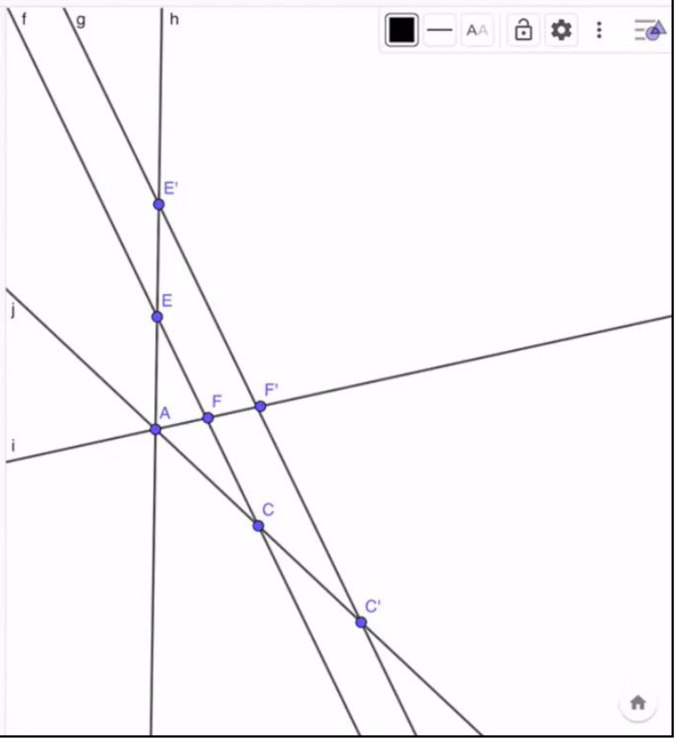
$g : \text{Recta}(E', C')$
$\rightarrow 11.61x + 5.63y = -42.1$

$h : \text{Recta}(A, E)$
$\rightarrow -3.13x + 0.05y = 12.43$

$i : \text{Recta}(A, F)$
$\rightarrow -0.32x + 1.46y = -6.8$

$j : \text{Recta}(A, C')$
$\rightarrow 5.36x + 5.72y = -53.51$

Entrada...




Sabemos:

i) E, F, C son colineales

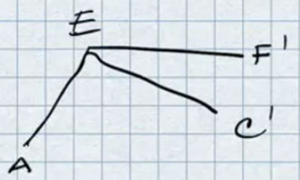
ii) Como se produjo H(A, k)

$\Rightarrow$ AEE' son colineales

AFF' " "

ACC' " "

$\Rightarrow$ podemos decir:




$$\frac{AE}{AE'} = \frac{AF}{AF'} = \frac{AC}{AC'} = \text{constante}$$

$\Rightarrow \triangle AEF \approx \triangle AE'F' \Rightarrow \measuredangle AEF \triangleq \measuredangle AE'F'$

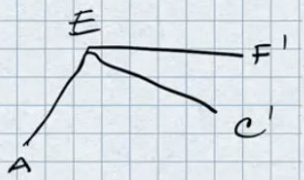
$\triangle AEC \approx \triangle AE'C' \Rightarrow \measuredangle AEC \triangleq \measuredangle AE'C'$


$\Rightarrow$ AEE' son colineales

AFF' " "

ACC' " "

$\Rightarrow$ podemos decir:



$$\frac{AE}{AE'} = \frac{AF}{AF'} = \frac{AC}{AC'} = \text{constante}$$

$\Rightarrow \triangle AEF \approx \triangle AE'F' \Rightarrow \measuredangle AEF \triangleq \measuredangle AE'F'$


$\shortparallel$


$\triangle AEC \approx \triangle AE'C' \Rightarrow \measuredangle AEC \triangleq \measuredangle AE'C'$


Sabemos que E, F, C son colineales

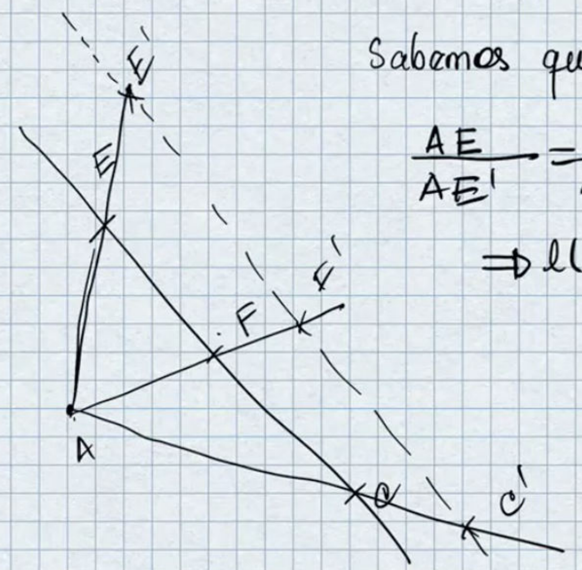
$\Rightarrow \measuredangle AEF \triangleq \measuredangle AEC$

$\therefore \measuredangle AE'F' \triangleq \measuredangle AE'C'$

$\Rightarrow$ E', F', C' son colineales.

$\Rightarrow E, F, C$ son colineales.

$\ell(E,F,C) \parallel \ell(E',F',C')$




Sabemos que

$$\frac{AE}{AE'} = \frac{AF}{AF'} \Rightarrow EF \parallel E'F'$$

$$\Rightarrow \ell(EFC) \parallel \ell(E'F'C')$$