

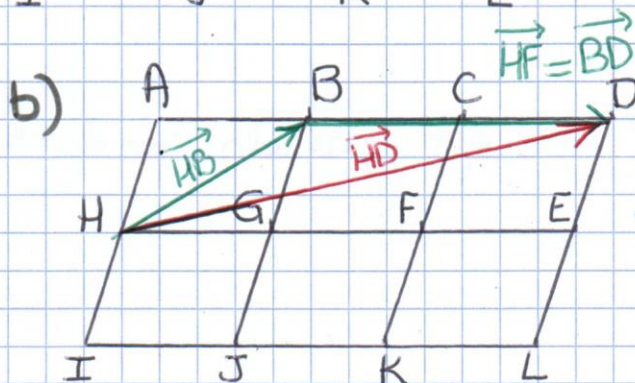
vision graphique:

$$\vec{AB} + \vec{GF} + \vec{KL} = \vec{AD}$$

Par calcul:

$$\vec{AB} + \vec{GF} + \vec{KL} = \vec{AB} + \vec{BC} + \vec{CD} = \vec{AD}$$

par 2 relations de Charles



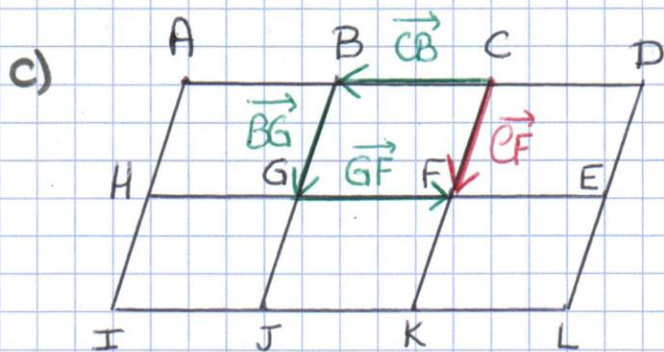
vision graphique:

$$\vec{HB} + \vec{HF} = \vec{HD}$$

Par calcul:

$$\vec{HB} + \vec{HF} = \vec{HB} + \vec{BD} = \vec{HD}$$

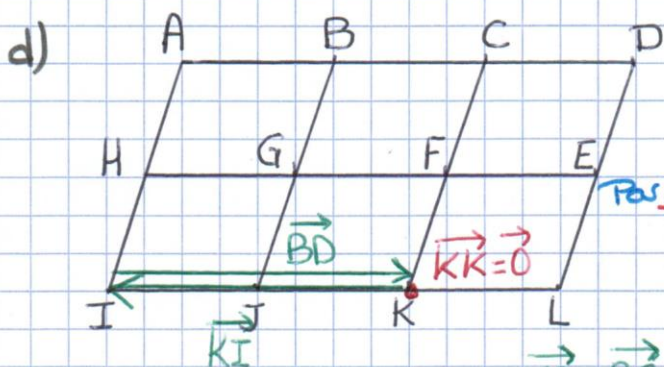
par la relation de Charles



vision graphique et par calcul:

$$\vec{CB} + \vec{BG} + \vec{GF} = \vec{CF}$$

par 2 relations de Charles



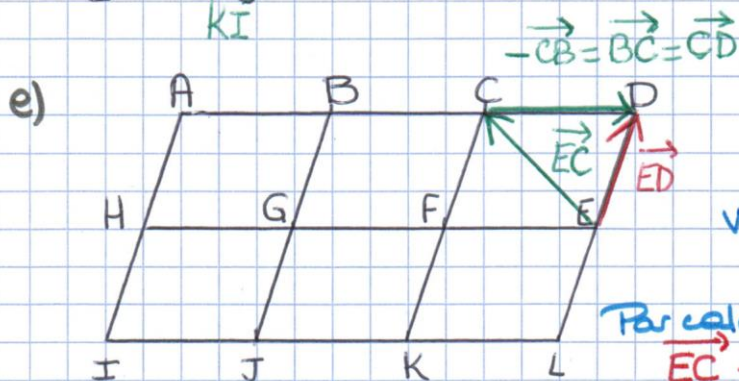
vision graphique:

$$\vec{KI} + \vec{BD} = \vec{KK} = \vec{0}$$

Par calcul:

$$\vec{KI} + \vec{BD} = \vec{KI} + \vec{IK} = \vec{KK} = \vec{0}$$

par la relation de Charles



$$\vec{EC} - \vec{CB} = \vec{EC} + (-\vec{CB}) = \vec{EC} + \vec{BC}$$

vision graphique:

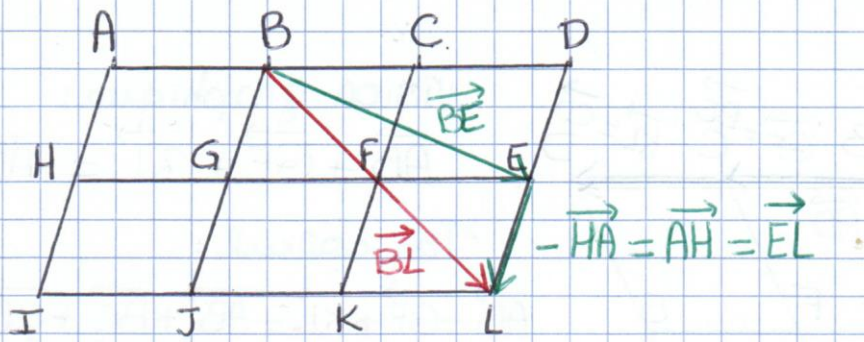
$$\vec{EC} - \vec{CB} = \vec{ED}$$

Par calcul:

$$\vec{EC} - \vec{CB} = \vec{EC} + \vec{BC} = \vec{EC} + \vec{CD} = \vec{ED}$$

par la relation de Charles

f)



$$\vec{BE} - \vec{HA} = \vec{BE} + (-\vec{HA}) = \vec{BE} + \vec{AH}$$

vision graphique:

$$\vec{BE} - \vec{HA} = \vec{BL}$$

Par calcul:

$$\vec{BE} - \vec{HA} = \vec{BE} + \vec{AH} = \vec{BE} + \vec{EL} = \vec{BL} \text{ par relation de Chasles}$$