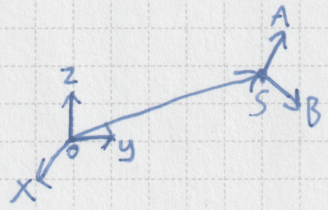

$E: \vec{x} = \vec{OS} + k \cdot \vec{SA} + l \cdot \vec{SB}$

$S(1|2|3)\quad A(7|-4|1)\quad B(6|8|2)$

$$E: \vec{x} = \begin{pmatrix}1\\2\\3\end{pmatrix} + k\begin{pmatrix}7-1\\-4-2\\1-3\end{pmatrix} + l\begin{pmatrix}6-1\\8-2\\2-3\end{pmatrix} = \begin{pmatrix}1\\2\\3\end{pmatrix} + k\begin{pmatrix}6\\-6\\-2\end{pmatrix} + l\begin{pmatrix}5\\6\\-1\end{pmatrix}$$

$$E: \vec{x} = \begin{pmatrix}1\\2\\3\end{pmatrix} + k\begin{pmatrix}4\\5\\6\end{pmatrix} + l\begin{pmatrix}-7\\8\\-9\end{pmatrix} \qquad P(3|5|-7) \qquad \vec{OP} = \vec{x}$$

$$\begin{pmatrix}1\\2\\3\end{pmatrix} + k\begin{pmatrix}4\\5\\6\end{pmatrix} + l\begin{pmatrix}-7\\8\\-9\end{pmatrix} = \begin{pmatrix}3\\5\\-7\end{pmatrix} \quad \Big| -\begin{pmatrix}1\\2\\3\end{pmatrix}$$

$$\begin{matrix}x)\\y)\\z)\end{matrix} \quad k\begin{pmatrix}4\\5\\6\end{pmatrix} + l\begin{pmatrix}-7\\8\\-9\end{pmatrix} = \begin{pmatrix}2\\3\\-10\end{pmatrix}$$

$$\begin{matrix}x)\\y)\\z)\end{matrix} \quad \begin{matrix}4k - 7l = 2\\5k + 8l = 3\\6k - 9l = -10\end{matrix}$$

$$\begin{matrix}4k - 7l = 2 \quad | \cdot 8\\5k + 8l = 3 \quad | \cdot 7\end{matrix}$$

$$\begin{matrix}32k - 56l = 16\\35k + 56l = 21\end{matrix} \; +$$

$$67k = 37 \quad | : 67$$

$$k = \frac{37}{67} \quad \text{(einsetzen in x)}$$

$$4 \cdot \frac{37}{67} - 7l = 2 \quad \Big| -\frac{4 \cdot 37}{67} \quad | : (-7)$$

$$l = \frac{2}{67}$$

Probieren mit z

$$z)\quad 6 \cdot \frac{37}{67} - 9 \cdot \frac{2}{67} \neq -10$$

$\frac{204}{67} \neq -10$, denn $P \notin E$

$$E: \vec{x} = \begin{pmatrix}-5\\1\\3\end{pmatrix} + k\begin{pmatrix}6\\2\\-1\end{pmatrix} + l\begin{pmatrix}-2\\3\\4\end{pmatrix}$$

$P(-3|9|10)$

$$\begin{pmatrix}-5\\1\\3\end{pmatrix} + k\begin{pmatrix}6\\2\\-1\end{pmatrix} + l\begin{pmatrix}-2\\3\\4\end{pmatrix} = \begin{pmatrix}-3\\9\\10\end{pmatrix} \quad \Big| -\begin{pmatrix}-5\\1\\3\end{pmatrix}$$

$$\begin{matrix}x)\\y)\\z)\end{matrix} \quad k\begin{pmatrix}6\\2\\-1\end{pmatrix} + l\begin{pmatrix}-2\\3\\4\end{pmatrix} = \begin{pmatrix}2\\8\\7\end{pmatrix}$$

$$\begin{matrix}x)\\y)\\z)\end{matrix} \quad \begin{matrix}6k - 2l = 2\\2k + 3l = 8\\-1k + 4l = 7\end{matrix}$$

$$\begin{matrix}6k - 2l = 2 \quad | \cdot 3\\2k + 3l = 8 \quad | : 2\end{matrix}$$

$$\begin{matrix}18k - 6l = 6\\k + 6l = 4\end{matrix} \; +$$

$$19k = 10 \quad | : 19$$

$$k = \frac{10}{19}$$

$$6 \cdot \frac{10}{19} - 2l = 2 \quad \Big| -\frac{6 \cdot 10}{19} \quad | : 2$$

$$l = \frac{8}{19}$$

$$z)\quad -1 \cdot \frac{10}{19} + 4 \cdot \frac{8}{19} \neq 7$$

$\frac{22}{19} \neq 7$, denn $P \notin E$

g_{AB} $A(1|2|3)$ $B(-6|2|1)$ $\quad g_{AB}: \vec{x} = \begin{pmatrix}1\\2\\3\end{pmatrix} + k\begin{pmatrix}-7\\0\\-2\end{pmatrix}$

E_{CDE} $C(-2|1|3)$ $D(3|5|-7)$ $E(-5|1|3)$ $\quad E_{CDE}: \vec{x} = \begin{pmatrix}-2\\1\\3\end{pmatrix} + r\begin{pmatrix}5\\4\\-10\end{pmatrix} + s\begin{pmatrix}-3\\0\\0\end{pmatrix}$ $\quad g = E$

$$\begin{pmatrix}1\\2\\3\end{pmatrix} + k\begin{pmatrix}-7\\0\\-2\end{pmatrix} = \begin{pmatrix}-2\\1\\3\end{pmatrix} + r\begin{pmatrix}5\\4\\-10\end{pmatrix} + s\begin{pmatrix}-3\\0\\0\end{pmatrix}$$

$$r\begin{pmatrix}-5\\-4\\10\end{pmatrix} + s\begin{pmatrix}3\\0\\0\end{pmatrix} + k\begin{pmatrix}-7\\0\\-2\end{pmatrix} = \begin{pmatrix}-2-1\\1-2\\3-3\end{pmatrix}$$

$$E: \vec{x} = \begin{pmatrix}-1\\3\\-2\end{pmatrix} + r\begin{pmatrix}5\\-2\\3\end{pmatrix} + s\begin{pmatrix}3\\-7\end{pmatrix} \qquad g: \vec{x} = \begin{pmatrix}-2\\1\\3\end{pmatrix} + k\begin{pmatrix}8\\-2\\3\end{pmatrix}$$

$$\begin{pmatrix}-2\\1\\3\end{pmatrix} + k\begin{pmatrix}8\\-2\\3\end{pmatrix} = \begin{pmatrix}-1\\3\\-2\end{pmatrix} + r\begin{pmatrix}5\\-2\\3\end{pmatrix} + s\begin{pmatrix}-1\\3\\-7\end{pmatrix}$$

$$r\begin{pmatrix}-5\\2\\-3\end{pmatrix} + s\begin{pmatrix}1\\-3\\7\end{pmatrix} + k\begin{pmatrix}-8\\2\\-3\end{pmatrix} = \begin{pmatrix}-1+2\\3-1\\-2-3\end{pmatrix}$$

x) $8k - 5r + 1s = 1$
y) $-2k + 2r - 3s = 2$
z) $3k - 3r + 7s = -5$

$$\left(\begin{array}{ccc|c} 8 & -5 & 1 & 1 \\ -2 & 2 & -3 & 2 \\ 3 & -3 & 7 & -5 \end{array}\right) \begin{array}{l} \\ \cdot 7 \\ \cdot 3 \end{array} \qquad \left(\begin{array}{ccc|c} 24 & -15 & 3 & 3 \\ 22 & -13 & 0 & 5 \\ -5 & 5 & 0 & -1 \end{array}\right)$$

$$\left(\begin{array}{ccc|c} 8 & -5 & 1 & 1 \\ -14 & 14 & -21 & 14 \\ 9 & -9 & 21 & -15 \end{array}\right) \begin{array}{l} \\ \cdot 7 \\ + \end{array}$$

$$\left(\begin{array}{ccc|c} 8 & -5 & 1 & 1 \\ -14 & 14 & -21 & 14 \\ -5 & 5 & 0 & -1 \end{array}\right) \begin{array}{l} \cdot 3 \\ :7 \\ \\ \end{array}$$

$$\left(\begin{array}{ccc|c} 24 & -15 & 3 & 3 \\ -2 & 2 & -3 & 2 \\ -5 & 5 & 0 & -1 \end{array}\right) \begin{array}{l} + \\ \\ \\ \end{array}$$