

# Kabelsalat

A(5|1|2) B(1|5|6); C(8|7,5|8) D(3|0|3); E(3|6|2) F(0|-1,5|3,5); G(9|8|1) H(-1|-2|8)

$$g: \vec{OX} = \vec{OA} + r \cdot \vec{AB} = \begin{pmatrix} 5 \\ -1 \\ 2 \end{pmatrix} + r \cdot \begin{pmatrix} -4 \\ 6 \\ -2 \end{pmatrix} = \begin{pmatrix} 5 \\ -1 \\ 2 \end{pmatrix} + r \cdot \begin{pmatrix} -4 \\ 6 \\ -2 \end{pmatrix}$$

$$h: \vec{OX} = \vec{OC} + s \cdot \vec{CD} = \begin{pmatrix} 8 \\ 7,5 \\ 8 \end{pmatrix} + s \cdot \begin{pmatrix} 3-8 \\ 0-7,5 \\ 3-8 \end{pmatrix} = \begin{pmatrix} 8 \\ 7,5 \\ 8 \end{pmatrix} + s \cdot \begin{pmatrix} -5 \\ -7,5 \\ -5 \end{pmatrix}$$

$$i: \vec{OX} = \vec{OE} + t \cdot \vec{EF} = \begin{pmatrix} 3 \\ 6 \\ 2 \end{pmatrix} + t \cdot \begin{pmatrix} 0-3 \\ -1,5-2 \\ 3,5-2 \end{pmatrix} = \begin{pmatrix} 3 \\ 6 \\ 2 \end{pmatrix} + t \cdot \begin{pmatrix} -3 \\ -3,5 \\ 1,5 \end{pmatrix}$$

$$j: \vec{OX} = \vec{OG} + u \cdot \vec{GH} = \begin{pmatrix} 9 \\ 8 \\ 1 \end{pmatrix} + u \cdot \begin{pmatrix} -1-9 \\ -2-8 \\ 8-1 \end{pmatrix} = \begin{pmatrix} 9 \\ 8 \\ 1 \end{pmatrix} + u \cdot \begin{pmatrix} -10 \\ -10 \\ 7 \end{pmatrix}$$

Schnittpunkte:

$$gh \left| \begin{array}{l} 5 + r \cdot (-4) = 8 + s \cdot (-5) \\ -1 + r \cdot 6 = 7,5 + s \cdot (-7,5) \\ 2 + r \cdot (-2) = 8 + s \cdot (-5) \end{array} \right| \begin{array}{l} +5s \quad -5 \\ +7,5s \quad +1 \\ +5s \quad -2 \end{array} \left| \begin{array}{l} -4r + 5s = 3 \\ 6r + 7,5s = 8,5 \\ 4r + 5s = 6 \end{array} \right| \Rightarrow KL$$

$$gi \left| \begin{array}{l} 5 + r \cdot (-4) = 3 + k \cdot (-3) \\ -1 + r \cdot 6 = 6 + k \cdot (-3,5) \\ 2 + r \cdot (-2) = 2 + k \cdot 1,5 \end{array} \right| \begin{array}{l} +3k \quad -5 \\ +7,5k \quad +1 \\ -1,5k \quad -2 \end{array} \left| \begin{array}{l} -4r + 3k = -2 \\ 6r + 7,5k = 7 \\ 4r - 1,5k = 0 \end{array} \right| \Rightarrow KL$$

$$gj \left| \begin{array}{l} 5 + r \cdot (-4) = 9 + z \cdot (-10) \\ -1 + r \cdot 6 = 8 + z \cdot (-10) \\ 2 + r \cdot (-2) = 1 + z \cdot 5 \end{array} \right| \begin{array}{l} +10z \quad -5 \\ +10z \quad +1 \\ -5z \quad -2 \end{array} \left| \begin{array}{l} -4r + 10z = 4 \\ 6r + 10z = 9 \\ 4r - 5z = -1 \end{array} \right|$$

$$\hookrightarrow r = \frac{1}{2} \quad z = \frac{3}{5}$$

$$g: \vec{OX} = \begin{pmatrix} 5 \\ -1 \\ 2 \end{pmatrix} + 0,5 \cdot \begin{pmatrix} -4 \\ 6 \\ -2 \end{pmatrix} = \begin{pmatrix} 3 \\ 2 \\ 1 \end{pmatrix}$$

$$j: \vec{OX} = \begin{pmatrix} 9 \\ 8 \\ 1 \end{pmatrix} + \frac{3}{5} \cdot \begin{pmatrix} -10 \\ -10 \\ 7 \end{pmatrix} = \begin{pmatrix} 3 \\ 2 \\ 1 \end{pmatrix}$$

$\Rightarrow S(3|2|1)$