

$$\alpha \cdot \vec{a} + \beta \cdot \vec{b} + \gamma \cdot \vec{c} = \vec{0} \quad \left| \begin{array}{ccc|c} \alpha & -\beta & +2\gamma & = 0 \\ 0 & \beta & -\gamma & = 0 \\ 0 & 0 & \gamma & = \alpha \end{array} \right|$$

$$\alpha \cdot \begin{pmatrix} 2 \\ 1 \\ 3 \end{pmatrix} + \beta \cdot \begin{pmatrix} 5 \\ -1 \\ 0 \end{pmatrix} + \gamma \cdot \begin{pmatrix} -2 \\ 2 \\ 3 \end{pmatrix} = \vec{0} \quad \text{Trivialsystem}$$

$$\left| \begin{array}{ccc|c} 2\alpha & +5\beta & -2\gamma & = 0 \\ \alpha & -\beta & +2\gamma & = 0 \\ 3\alpha & & +3\gamma & = 0 \end{array} \right| \quad \begin{array}{l} 1 \cdot (-2) \\ \Rightarrow \text{linear} \\ \text{unabhängig} \end{array} \quad \begin{array}{l} 1 \cdot (-3) \end{array}$$

$$\left| \begin{array}{ccc|c} \alpha & -\beta & +2\gamma & = 0 \\ 0 & +7\beta & -6\gamma & = 0 \\ 0 & 3\beta & -3\gamma & = 0 \\ & \beta & -\gamma & = -\alpha \end{array} \right| \quad \begin{array}{l} 1:3 \\ 1 \cdot (-7) \end{array}$$

$$\alpha \cdot \vec{a} + \beta \cdot \vec{b} + \gamma \cdot \vec{c} = \vec{d}$$

$$\begin{cases} 2\alpha + 5\beta - 2\gamma = 6 \\ \alpha - \beta + 2\gamma = 5 \\ 3\alpha + 3\gamma = -6 \end{cases} \quad \left| \begin{array}{l} \text{PIVOT } 1. (-2) \rightarrow \\ 1. (-3) \rightarrow \end{array} \right.$$

$$\begin{cases} \alpha - \beta + 2\gamma = 5 \\ 0 \quad 7\beta - 6\gamma = -4 \\ 0 \quad 3\beta - 3\gamma = -21 \\ \quad \beta - \gamma = -7 \end{cases} \quad \left| \begin{array}{l} 1:3 \\ 1. (-7) \end{array} \right.$$

$$\begin{cases} \alpha - \beta + 2\gamma = 5 \\ 0 \quad \beta - \gamma = -7 \\ 0 \quad 0 \quad \gamma = 45 \end{cases} \quad \left| \begin{array}{l} \rightarrow \\ \rightarrow \end{array} \right. \quad \beta = 38 \quad \rightarrow \quad \alpha = -47$$

$$a \begin{pmatrix} 1 \\ 2 \\ -1 \end{pmatrix} + b \cdot \begin{pmatrix} 2 \\ 1 \\ 0 \end{pmatrix} + c \begin{pmatrix} -3 \\ -p \\ 1 \end{pmatrix} = \vec{0}$$

$$\begin{vmatrix} 1a + 2b - 3c = 0 \\ 2a + b - p \cdot c = 0 \\ -c + c = 0 \end{vmatrix} \quad \text{Pivot } \left. \begin{matrix} 1 \cdot (-2) \\ c \end{matrix} \right\} +$$

$$\begin{vmatrix} a + 2b - 3c = 0 \\ 0 \quad -2a + b + 3pc = 0 \\ 0 \quad 2b - 2c = 0 \end{vmatrix} \Rightarrow \begin{vmatrix} a + 2b - 3c = 0 \\ 0 \quad (1-2a) \cdot b + (3a-p) \cdot c = 0 \\ 0 \quad b - c = 0 \end{vmatrix}$$

$$\begin{vmatrix} a + 2b - 3c = 0 \\ 0 \quad b - c = 0 \\ 0 \quad 0 \quad * \quad -(2a-1) \cdot c + (3a-p) \cdot c \end{vmatrix} \begin{matrix} \\ \\ \} = 0 \\ (-2a+1 + 3a-p) \cdot c \\ (a-p+1) \cdot c = 0 \end{matrix}$$

$\cdot -(1-2a) = (2a-1)$