

GLEICHUNGSSYSTEME (II)

5)

$$\begin{array}{cccc|cccc} -1 & 2 & 3 & 3+k & 1 & 2 & 3 & 3+k \\ 0 & (k+1) & (1-k) & k+1 & 0 & (k+1) & (1-k) & k+1 \\ 1 & 0 & -1 & -1 & 0 & 2 & 2 & \end{array}$$

$$\begin{array}{cccc|c} -1 & 2 & 3 & 3+k & \\ 0 & -2(k+1) & -2(1-k) & -2(k+1) & \cdot (-2) \\ 0 & 2(k+1) & 2(k+1) & (2+k) & \cdot (k+1) \end{array} \quad \text{SF: } k = -1 \text{ s. u.}$$

$$\text{III: } [-2(1-k) + 2(k+1)] x_3 = -2(k+1) + (k+2)(k+1)$$

$$\Leftrightarrow (-2 + 2k + 2k + 2) x_3 = -2k - 2 + k^2 + 3k + 2$$

$$\Leftrightarrow 4k x_3 = k^2 + k = k(k+1)$$

1. Fall: $k=0$: $0x_3 = 0$ (w) $\Rightarrow \infty$ viele Lsgen

$$\text{Setze } x_3 = \alpha \text{ in III: } 2x_2 + 2x_3 = 2 \quad (+k) \quad \leftarrow = 0$$

$$\Rightarrow x_2 = 1 - \alpha \text{ in I}$$

$$x_1 = 2x_2 + 3x_3 - 3 - k \stackrel{=0}{=} 2(1-\alpha) + 3\alpha - 3 = \alpha - 1$$

$$L = \left\{ (\alpha - 1 \mid 1 - \alpha \mid \alpha) \right\}$$

2. Fall: $k=-1$

$$\begin{array}{cccc|c} -1 & 2 & 3 & 2 & x_2 = 1/2 \\ 0 & 0 & 2 & 0 & \Rightarrow x_3 = 0 \\ 1 & 0 & -1 & -1 & x_1 = -1 \end{array}$$

$$L = \left\{ (-1 \mid 1/2 \mid 0) \right\}$$

3. Fall: $k \in \mathbb{R} \setminus \{-1, 0\}$

$$x_3 = \frac{1}{4}(k+1)$$

$$\text{III: } x_1 = -1 + x_3 = -1 + \frac{1}{4}k + \frac{1}{4} = \frac{1}{4}k - \frac{3}{4} = \frac{1}{4}(k-3)$$

$$\text{I: } 2x_2 = 3 + k + x_1 - 3x_3 \Leftrightarrow x_2 = \frac{1}{4}(k+3)$$

$$L = \left\{ \left(\frac{1}{4}(k-3) \mid \frac{1}{4}(k+3) \mid \frac{1}{4}(k+1) \right) \right\}$$