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$$\begin{array}{ccc|c} 1 & 1 & 1 & 0 \\ 2 & 4 & 6 & 0 \\ 3 & 6 & 9 & 0 \end{array} \rightarrow \begin{array}{ccc|c} 1 & 1 & 1 & 0 \\ 0 & 2 & 4 & 0 \\ 0 & 3 & 6 & 0 \end{array} \rightsquigarrow \begin{array}{ccc|c} 1 & 1 & 1 & 0 \\ 0 & 2 & 4 & 0 \\ 0 & 0 & 0 & 0 \end{array}$$

$\Rightarrow$  1 Parameter frei wählbar  $\dim(\mathbb{L}) = 1$ , wähle  $z = r$

$$\rightarrow \begin{cases} 2y + 4r = 0 & \rightarrow y = -2r \\ x + (-2r) + r = 0 & \rightarrow x = r \end{cases}$$

$$\Rightarrow \mathbb{L} = \left\{ r \cdot \begin{pmatrix} 1 \\ -2 \\ 1 \end{pmatrix} : r \in \mathbb{R} \right\} \quad (\text{Gerade})$$

$$\begin{array}{ccc|c} 1 & 0 & 2 & 0 \\ 3 & 2 & 1 & 0 \\ 4 & 1 & 3 & 5 \end{array} \rightsquigarrow \begin{array}{ccc|c} 1 & 0 & 2 & 0 \\ 0 & 2 & -5 & 0 \\ 0 & 1 & -5 & 5 \end{array} \rightsquigarrow \begin{array}{ccc|c} 1 & 0 & 2 & 0 \\ 0 & 2 & -5 & 0 \\ 0 & 0 & 5 & 5 \end{array}$$

$\Rightarrow \dim(\mathbb{L}) = 0$ , kein Parameter wählbar

$$5z = 5 \Rightarrow z = 1$$

$$2y - 5z = 0 \Rightarrow 2y = 5 \rightarrow y = \frac{5}{2}$$

$$x + 2z = 0 \Rightarrow x = -2$$

$$\mathbb{L} = \left\{ \begin{pmatrix} -2 \\ \frac{5}{2} \\ 1 \end{pmatrix} \right\} \quad (\text{Punkt})$$