

Übung 9

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Aufgabe 1

(i)

$$\left(\begin{array}{ccc|ccc} 1 & -2 & 0 & 1 & 0 & 0 \\ 2 & 1 & 1 & 0 & 1 & 0 \\ 1 & 2 & 1 & 0 & 0 & 1 \end{array} \right)$$

$$Z_2 - 2 \cdot Z_1 \rightarrow Z_2 \left(\begin{array}{ccc|ccc} 1 & -2 & 0 & 1 & 0 & 0 \\ 0 & 5 & 1 & -2 & 1 & 0 \\ 1 & 2 & 1 & 0 & 0 & 1 \end{array} \right)$$

$$Z_3 - Z_1 \rightarrow Z_3 \left(\begin{array}{ccc|ccc} 1 & -2 & 0 & 1 & 0 & 0 \\ 0 & 5 & 1 & -2 & 1 & 0 \\ 0 & 4 & 1 & -1 & 0 & 1 \end{array} \right)$$

$$Z_2 - Z_3 \rightarrow Z_2 \left(\begin{array}{ccc|ccc} 1 & -2 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & -1 & 1 & -1 \\ 0 & 4 & 1 & -1 & 0 & 1 \end{array} \right)$$

$$Z_1 + 2 \cdot Z_2 \rightarrow Z_1 \left(\begin{array}{ccc|ccc} 1 & 0 & 0 & -1 & 2 & -2 \\ 0 & 1 & 0 & -1 & 1 & -1 \\ 0 & 4 & 1 & -1 & 0 & 1 \end{array} \right)$$

$$Z_3 - 4 \cdot Z_2 \rightarrow Z_3 \left(\begin{array}{ccc|ccc} 1 & 0 & 0 & -1 & 2 & -2 \\ 0 & 1 & 0 & -1 & 1 & -1 \\ 0 & 0 & 1 & 3 & -4 & 5 \end{array} \right)$$

$$A^{-1} = \begin{pmatrix} -1 & 2 & -2 \\ -1 & 1 & -1 \\ 3 & -4 & 5 \end{pmatrix}$$