LÖSUNG 2b)

$$\begin{array}{lrcl} \text{I} & 5x-5y-3z & = & 2 \\ \text{II} & -x+2y+z & = & -2 \\ \text{III} & 2x+2y+3z & = & -1 \end{array}$$

$$\left(\begin{array}{ccc|c} 5 & -5 & -3 & 2 \\ -1 & 2 & 1 & -2 \\ 2 & 2 & 3 & -1 \end{array}\right)$$

doof, keine 1 ... daher tausche ich Zeile 1 und 2.

$$\left(\begin{array}{ccc|c} -1 & 2 & 1 & -2 \\ 5 & -5 & -3 & 2 \\ 2 & 2 & 3 & -1 \end{array}\right) \begin{array}{l} \\ +5\cdot\text{I} \\ +2\cdot\text{I} \end{array}$$

$$\left(\begin{array}{ccc|c} -1 & 2 & 1 & -2 \\ 0 & 5 & 2 & -8 \\ 0 & 6 & 5 & -5 \end{array}\right) \cdot 5 - 6\cdot\text{II}$$

doofe Kombi, aber muss ja ... gerne in zwei Schritten

$$\left(\begin{array}{ccc|c} -1 & 2 & 1 & -2 \\ 0 & 5 & 2 & -8 \\ 0 & 30 & 25 & -25 \end{array}\right) -6\cdot\text{II}$$

$$\left(\begin{array}{ccc|c} -1 & 2 & 1 & -2 \\ 0 & 5 & 2 & -8 \\ 0 & 0 & 13 & 23 \end{array}\right)$$

$$\text{III} \quad 13z = 23 \quad |:13$$

$$\Leftrightarrow z = \frac{23}{13}$$

$$\text{II} \quad 5y + 2\cdot\frac{23}{13} = -8$$

$$\Leftrightarrow 5y = -\frac{104}{13} - \frac{46}{13} = -\frac{150}{13} \quad |:5$$

$$\Leftrightarrow y = -\frac{30}{13}$$

$$\text{I} \quad 5x - 5\cdot\left(-\frac{30}{13}\right) - 3\cdot\frac{23}{13} = 2$$

$$\Leftrightarrow 5x + \frac{150}{13} - \frac{69}{13} = \frac{26}{13}$$

$$\Leftrightarrow 5x + \frac{81}{13} = \frac{26}{13} \quad |-\frac{81}{13}$$

$$\Leftrightarrow 5x = -\frac{55}{13} \quad |:5$$

$$= -\frac{11}{13}$$