

S 215 Nr. 10b

$$4x_1 - x_2 + 3x_3 = 2$$

$$x_1 + 3x_2 = 5$$

$$4x_2 = 8$$

hat Stufenform

$$\frac{x_2}{4} = 2$$
$$x_1 + 3 \cdot 2 = 5 \Rightarrow \underline{x_1} = 5 - 6 = \underline{-1}$$

$$4 \cdot (-1) - 2 + 3x_3 = 2 \Rightarrow 3x_3 = 2 + 2 + 4 = 8 \Rightarrow \underline{x_3} = \underline{\frac{8}{3}}$$

$$\mathbb{L} = \left\{ \left( -1; 2; \frac{8}{3} \right) \right\}$$

10c.)  $5x_1 = 10 \Rightarrow \underline{x_1} = 2$  *zuerst*

$$5x_2 - 3x_3 = 9 \Rightarrow 5 \cdot (-8) - 3x_3 = 9 \Rightarrow -3x_3 = 9 + 40 \Rightarrow x_3 = \underline{\underline{-\frac{49}{3}}}$$

$$4x_1 + x_2 = 0 \Rightarrow 4 \cdot 2 + x_2 = 0 \Rightarrow \underline{x_2} = -8$$
 *als zweites*

10d)

$$\begin{array}{r|l} x_1 + x_2 = 3 & \cdot 1 \\ x_1 + x_2 - x_3 = 0 & \cdot (-1) \\ \hline x_2 + x_3 = 4 \end{array}$$

$$x_1 + x_2 = 3$$

$$x_3 = 3$$

$$x_2 + x_3 = 4$$

$$\underline{x_3 = 3}$$

$$x_2 + 3 = 4 \Rightarrow \underline{x_2 = 1}$$

$$x_1 + 1 = 3 \Rightarrow \underline{x_1 = 2}$$

$$\mathbb{L} = \left\{ (2; 1; 3) \right\}$$

10e)

$$\begin{array}{r|l|l} x_1 + x_2 - x_3 = 0 & \cdot 1 & \cdot 1 \\ x_1 + x_3 = 2 & \cdot (-1) & \\ \hline x_1 - 2x_2 + x_3 = 2 & & \cdot (-1) \end{array}$$

$$x_1 + x_2 - x_3 = 0$$

$$x_2 - 2x_3 = -2 \quad \cdot 1$$

$$3x_2 - 2x_3 = -2 \quad \cdot (-1)$$

$$x_1 + x_2 - x_3 = 0 \Rightarrow x_1 + 0 - 1 = 0 \Rightarrow \underline{x_1 = 1}$$

$$x_2 - 2x_3 = -2 \Rightarrow 0 - 2x_3 = -2 \Rightarrow \underline{x_3 = 1}$$

$$-2x_2 = 0 \Rightarrow \underline{x_2 = 0}$$

$$\mathbb{L} = \left\{ (1; 0; 1) \right\}$$