

Nr. 10) $x_1 - x_2 - x_3 = 2 \quad | \cdot (-1)$

a) $x_1 + 2x_2 - 4x_3 = -1 \quad | \cdot 1$

$$x_1 - x_2 - x_3 = 2$$

$$3x_2 - 3x_3 = -3 \quad | :3$$

$$x_1 - x_2 - x_3 = 2 \Rightarrow x_1 = 2 + x_2 + x_3 = 2 + t - 1 + t = \underline{2t + 1}$$

$$x_2 - x_3 = -1 \Rightarrow x_2 = x_3 - 1 \text{ wähle } x_3 = t \Rightarrow \underline{x_2 = t - 1}$$

$$\mathbb{L} = \{ (2t + 1 | t - 1 | t) \mid t \in \mathbb{R} \}$$

b) $x_1 + x_2 + x_3 = 1 \quad | \cdot 1 \quad | \cdot 1$
 $2x_1 - 2x_2 + x_3 = 2 \quad | \cdot (-1)$
 $x_1 - x_2 - x_3 = 7 \quad | \cdot 1$
 $-x_1 + x_2 = -3$

$$x_1 + x_2 + x_3 = 1$$

$$-x_1 + 3x_2 = -1 \quad | \cdot 1$$

$$2x_1 = 8$$

$$-x_1 + x_2 = -3 \quad | \cdot (-1)$$

$$x_1 + x_2 + x_3 = 1 \Rightarrow 4 + 1 + x_3 = 1 \Rightarrow \underline{x_3 = -4}$$

$$-x_1 + 3x_2 = -1 \Rightarrow -4 + 3 = -1 \checkmark \text{ Gl. erfüllt}$$

$$2x_1 = 8 \Rightarrow \underline{x_1 = 4}$$

$$2x_2 = 2 \Rightarrow \underline{x_2 = 1}$$

$$\mathbb{L} = \{ (4 | 1 | -4) \}$$

c) $6x_1 + x_2 + x_3 = 30 \quad | \cdot 1 \quad | \cdot 1$
 $x_1 + x_2 + 6x_3 = 5 \quad | \cdot (-6)$
 $2x_1 + x_2 + 5x_3 = 10 \quad | \cdot (-3)$

$$6x_1 + x_2 + x_3 = 30$$

$$-5x_2 - 35x_3 = 0 \quad | \cdot 2$$

$$-2x_2 - 14x_3 = 0 \quad | \cdot (-5)$$

$$6x_1 + x_2 + x_3 = 30 \Rightarrow 6x_1 - 7t + t = 30 \Rightarrow x_1 = \frac{30}{6} + \frac{6t}{6} = \underline{5 + t}$$

$$-5x_2 - 35x_3 = 0 \Rightarrow x_2 = -7x_3 \text{ wähle } x_3 = t \Rightarrow \underline{x_2 = -7t}$$

$$0 = 0$$

$$\mathbb{L} = \{ (5 + t | -7t | t) \mid t \in \mathbb{R} \}$$