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Nr. 3) a) I $x_1 + x_2 + 4x_3 = 0$ | $\cdot 2$

II $2x_1 - x_2 - x_3 = 3$ | $\cdot(-1)$

III $-3x_1 + 4x_2 - 5x_3 = -7$ | $\cdot 1$ | $\cdot 3$

→ alternative Schreibweise für $II_a = 2 \cdot I + (-1) II$

$III_a = 3 \cdot I + 1 \cdot III$

$x_1 + x_2 + 4x_3 = 0$

II_a $3x_2 + 9x_3 = -3$ | $\cdot 7$

III_a $7x_2 + 7x_3 = -7$ | $\cdot(-3)$

$III_b = 7 \cdot II_a - 3 \cdot III_a$

$x_1 + x_2 + 4x_3 = 0 \Rightarrow x_1 + (-1) + 4 \cdot 0 = 0 \Rightarrow x_1 = 1$

$3x_2 + 9x_3 = -3 \Rightarrow 3x_2 + 9 \cdot 0 = -3 \Rightarrow x_2 = -1$

$+42x_3 = 0 \Rightarrow x_3 = 0$

$\mathbb{L} = \{(1 \mid -1 \mid 0)\}$

b) $2x_1 - x_2 - x_3 = 2$ | $\cdot 2$

$4x_1 + 6x_3 = 2$

$-3x_1 + 2x_2 - x_3 = 1$ | $\cdot 1$

$2x_1 - x_2 - x_3 = 2$

$4x_1 + 6x_3 = 2$ | $\cdot 1$

$1 \cdot x_1 - 3x_3 = 5$ | $\cdot 2$

$2x_1 - x_2 - x_3 = 2 \Rightarrow 2 \cdot 2 - x_2 - (-1) = 2 \Rightarrow -x_2 = -3 \Rightarrow x_2 = 3$

$4x_1 + 6x_3 = 2 \Rightarrow 4 \cdot 2 + 6x_3 = 2 \Rightarrow 6x_3 = -6 \Rightarrow x_3 = -1$

$6x_1 = 12 \Rightarrow x_1 = 2$ $\quad \mathbb{L} = \{(2 \mid 3 \mid -1)\}$

c) $x_2 + x_3 = 3$ | $\cdot 1$

$x_1 + 2x_2 = 7$

$2x_1 - x_3 = 8$ | $\cdot 1$

$x_2 + x_3 = 3$

$x_1 + 2x_2 = 7$ | $\cdot 2$

$2x_1 + x_2 = 11$ | $\cdot(-1)$

$x_2 + x_3 = 3 \Rightarrow 1 + x_3 = 3 \Rightarrow x_3 = 2$

$x_1 + 2x_2 = 7 \Rightarrow x_1 + 2 \cdot 1 = 7 \Rightarrow x_1 = 5$

$3x_2 = 3 \Rightarrow x_2 = 1$

$\mathbb{L} = \{(5 \mid 1 \mid 2)\}$

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