$$\begin{aligned}3x_1 - x_2 + 2x_3 &= 8\\ 4x_1 + 2x_2 + 7x_3 &= 8\\ tx_1 + x_2 + x_3 &= 4.\end{aligned}$$

t=1: det(**A**)=$-14 \Rightarrow$ LGS eindeutig lösbar

$$\begin{aligned}3x_1 - x_2 + 2x_3 &= 8\\ 4x_1 + 2x_2 + 7x_3 &= 8\\ 1x_1 + x_2 + x_3 &= 4.\end{aligned}$$

Bestimmung der Lösung mit der Cramerschen Regel

$$\mathbf{A} = \begin{pmatrix}3 & -1 & 2\\ 4 & 2 & 7\\ 1 & 1 & 1\end{pmatrix} \quad \mathbf{A}^{(1)} = \begin{pmatrix}\boxed{8} & -1 & 2\\ \boxed{8} & 2 & 7\\ \boxed{4} & 1 & 1\end{pmatrix} \quad \mathbf{A}^{(2)} = \begin{pmatrix}3 & \boxed{8} & 2\\ 4 & \boxed{8} & 7\\ 1 & \boxed{4} & 1\end{pmatrix} \quad \mathbf{A}^{(3)} = \begin{pmatrix}3 & -1 & \boxed{8}\\ 4 & 2 & \boxed{8}\\ 1 & 1 & \boxed{4}\end{pmatrix}$$

$$x_1 = \frac{\left|\mathbf{A}^{(1)}\right|}{|\mathbf{A}|} \qquad x_2 = \frac{\left|\mathbf{A}^{(2)}\right|}{|\mathbf{A}|} \qquad x_3 = \frac{\left|\mathbf{A}^{(3)}\right|}{|\mathbf{A}|}$$

$$|\mathbf{A}| = -14, \left|\mathbf{A}^{(1)}\right| = -60$$

$$x_1 = \frac{\left|\mathbf{A}^{(1)}\right|}{|\mathbf{A}|} = \frac{-60}{-14} = \frac{30}{7}$$

$$x_2 = \frac{\begin{vmatrix}3 & 8 & 2\\ 4 & 8 & 7\\ 1 & 4 & 1\end{vmatrix}\begin{matrix}+\\ \\ \cdot(-2)\end{matrix}}{|\mathbf{A}|} = \frac{\begin{vmatrix}1 & 0 & 0\\ 2 & 0 & 5\\ 1 & 4 & 1\end{vmatrix}}{-14} = \frac{(-4)\cdot(1\cdot 5 - 2\cdot 0)}{-14} = \frac{-20}{-14} = \frac{10}{7}$$

$$x_3 = \frac{\begin{vmatrix}3 & -1 & 8\\ 4 & 2 & 8\\ 1 & 1 & 4\end{vmatrix}\begin{matrix}+\\ \\ \cdot(-2)\end{matrix}}{|\mathbf{A}|} = \frac{\begin{vmatrix}1 & -3 & 0\\ 2 & 0 & 0\\ 1 & 1 & 4\end{vmatrix}}{-14} = \frac{4\cdot(1\cdot 0 - 2\cdot(-3))}{-14} = \frac{24}{-14} = -\frac{12}{7}$$