

$$\begin{cases} z_1 = x_1 + x_2 - 2x_3 \\ z_2 = 2x_2 + x_3 \\ z_3 = 3x_3 \end{cases} \Rightarrow \begin{cases} x_1 = -z_1 - x_2 + 2x_3 \\ x_2 = \frac{z_2 - x_3}{2} = \frac{1}{2} \left(z_2 - \frac{1}{3} z_3 \right) \\ x_3 = \frac{1}{3} z_3 \end{cases} \Rightarrow$$

$$\Rightarrow \begin{cases} x_1 = z_1 - \frac{1}{2} \left(z_2 - \frac{1}{3} z_3 \right) + 2z_3 \\ x_2 = \frac{1}{2} \left(z_2 - \frac{1}{3} z_3 \right) \\ x_3 = \frac{1}{3} z_3 \end{cases}$$

$$\begin{cases} x_1 = z_1 - \frac{1}{2} z_2 + \frac{5}{6} z_3 \\ x_2 = \frac{1}{2} z_2 - \frac{1}{6} z_3 \\ x_3 = \frac{1}{3} z_3 \end{cases}$$

Antwort:
$$\begin{cases} x_1 = z_1 - \frac{1}{2} z_2 + \frac{5}{6} z_3 \\ x_2 = \frac{1}{2} z_2 - \frac{1}{6} z_3 \\ x_3 = \frac{1}{3} z_3 \end{cases}$$

N 4.212

$$4x_1^2 + x_2^2 + x_3^2 - 4x_1x_2 + 4x_1x_3 - 3x_2x_3 \quad \text{①}$$

Permutation

$$z_1 = 2x_1 - x_2 + x_3$$

$$z_1^2 = 4x_1^2 - 4x_1x_2 + x_2^2 + 4x_1x_3 - 4x_2x_3 + x_3^2$$

$$\text{①} \quad (2x_1 - x_2 + x_3)^2 - \underbrace{x_2^2 + 4x_2x_3 - x_3^2}_{\text{komplett}} + \underbrace{x_2^2 + x_3^2 - 3x_2x_3}_{\text{no yet}}$$

$$= (2x_1 - x_2 + x_3)^2 + x_2x_3$$

$$z_2 = \left(\frac{1}{2}x_2 - \frac{1}{2}x_3 \right)^2 = \frac{1}{4}x_2^2 - \frac{1}{2}x_2x_3 + \frac{1}{4}x_3^2$$

-2- komplett