

Aufgabe 2

a) $PAx = PB$

$$\begin{pmatrix} 0.8 & 2.2 & 3.6 & 2.4 \\ 2 & 3 & 4 & 1 \\ 1.2 & 2 & 5.8 & 4 \end{pmatrix} \quad Z_2 \Leftrightarrow Z_1 \quad L = \begin{pmatrix} 1 & 0 & 0 \\ - & 1 & 0 \\ - & - & 1 \end{pmatrix}$$

$$P_1 = \begin{pmatrix} 0 & 1 & 0 \\ 1 & 0 & 0 \\ 0 & 0 & 1 \end{pmatrix}$$

$$\begin{pmatrix} 2 & 3 & 4 & 1 \\ 0.8 & 2.2 & 3.6 & 2.4 \\ 1.2 & 2 & 5.8 & 4 \end{pmatrix} \quad Z_2 = Z_2 - \frac{0.8}{2.0} Z_1 \quad L = \begin{pmatrix} 1 & 0 & 0 \\ 0.4 & 1 & 0 \\ - & - & 1 \end{pmatrix}$$

$$\begin{pmatrix} 2 & 3 & 4 & 1 \\ 0 & 1 & 2 & 2 \\ 1.2 & 2 & 5.8 & 4 \end{pmatrix} \quad Z_3 = Z_3 - \frac{1.2}{2.0} Z_1 \quad L = \begin{pmatrix} 1 & 0 & 0 \\ 0.4 & 1 & 0 \\ 0.6 & - & 1 \end{pmatrix}$$

$$\begin{pmatrix} 2 & 3 & 4 & 1 \\ 0 & 1 & 2 & 2 \\ 0 & 0.2 & \frac{17}{5} & \frac{17}{5} \end{pmatrix} \quad Z_3 = Z_3 - \frac{0.2}{1} Z_2 \quad L = \begin{pmatrix} 1 & 0 & 0 \\ 0.4 & 1 & 0 \\ 0.6 & 0.2 & 1 \end{pmatrix}$$

$$\Rightarrow \begin{pmatrix} 2 & 3 & 4 & 1 \\ 0 & 1 & 2 & 2 \\ 0 & 0 & 3 & 3 \end{pmatrix}$$

b) $Ly = PB$

$$\begin{pmatrix} 1 & 0 & 0 & 1 \\ 0.4 & 1 & 0 & 1 \\ 0.6 & 0.2 & 1 & 3 \end{pmatrix} \quad Z_2 = Z_2 - \frac{0.4}{1} Z_1$$

$$\begin{pmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 0 & 1.6 \\ 0.6 & 0.2 & 1 & 3 \end{pmatrix} \quad Z_3 = Z_3 - \frac{0.6}{1} Z_1$$

$$\begin{pmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 0 & 1.6 \\ 0 & 0.2 & 1 & 2.4 \end{pmatrix} \quad Z_2 = Z_2 - \frac{0.2}{1} Z_2$$

$$\begin{pmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 0 & 1.6 \\ 0 & 0 & 1 & 2.2 \end{pmatrix}$$

$$Rx = y = 2.2$$

$$\begin{pmatrix} 2 & 3 & 4 & 1 \\ 0 & 1 & 2 & 1.6 \\ 0 & 0 & 3 & 2.2 \end{pmatrix} \quad x = \begin{pmatrix} -\frac{7}{6} \\ 2 \\ \frac{15}{3} \\ \frac{2.2}{3} \end{pmatrix}$$

c) Stimmt überein.