\[ r = \frac{z - 1}{z + 1} \quad \therefore z = \frac{r}{r_L} \]

2. 1. 1

Da an Ende \( z_2 = z_L \) gilt, existiert keine Rücklaufwelle. Weil

\[ Z_{\text{in}} = \frac{U_1}{I_1} = z_L \]

\[ \frac{z_2}{z_1} \]

\[ U_2 = U_1 \cdot \frac{z_2}{z_1 + z_L} \]

2. 1. 2

\[ z_1 = z_L \quad \therefore i_1 \]
\[ U_2 = U_{2r} + U_{2i} = U_{2r} \left( \lambda + r_2 \right) \]

\[ R_2' = 2 \]

\[ U_2 = U_{2r} - \frac{Z_2}{Z_1 + Z_2} \]

\[ R_2' = \frac{Z_1 - Z_2}{Z_1 + Z_2} = 0 \]

\[ \Rightarrow Z_1 = Z_2 \]

\[ U_{2r} = U_{1r} e^{-j\lambda Z_2} \]

\[ U_{1r} = \frac{U_0}{\lambda} \quad \text{soll innerhalb einer} \]

\[ \Rightarrow Z_1 = \frac{Z_2}{\lambda} \quad \text{ist} \]

\[ \text{somit} \quad U_{2r} = \frac{U_0}{\lambda} e^{-j\lambda Z_2} = \frac{U_{2r}}{\lambda} \]
\[ u_2 = U_0 e^{-j \beta L} \cdot \frac{Z_2}{Z_L + Z_2} \]