

①

$$y_{11} = 4 + j4.5$$

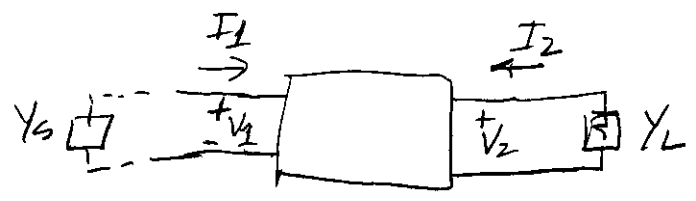
$$y_{21} = 40 - j'42$$

$$y_{12} = -j0.5$$

$$y_{22} = 0.1 + j$$

$$Y_L = 0.1 - j$$

$$Y_S = 4 - j4.5$$



$$I_1 = y_{11} V_1 + y_{12} V_2$$

$$I_2 = y_{21} V_1 + y_{22} V_2 = -Y_L V_2$$

$$y_{21} V_1 = -V_2 (y_{22} + Y_L)$$

$$V_2 = \frac{-y_{21}}{y_{22} + Y_L} \cdot V_1$$

$$I_1 = y_{11} V_1 + y_{12} \cdot \frac{-y_{21}}{y_{22} + Y_L} \cdot V_1$$

$$Y_{IN} \Big|_{\text{WITHOUT } Y_S} = \frac{I_1}{V_1} = y_{11} - \frac{y_{12} y_{21}}{y_{22} + Y_L}$$

$$Y_{IN} = 4 + j4.5 - \frac{-j0.5 * (40 - j42)}{0.1 + j + 0.1 - j}$$

$$Y_{IN} = 4 + j4.5 - \frac{-j20 - 21}{0.2}$$

$$Y_{IN} = 4 + j4.5 + \frac{21}{0.2} + j \frac{20}{0.2} = 109 + j104.5$$

WITHOUT \$Y_S\$