Special Problem 5.2-1

A matching network has been constructed to match a complex load to a transmission line with characteristic impedance $Z_0 = 50\ \Omega$.

Note that this matching network is not specifically one of the standard designs that we studied.

Determine the complex admittance $Y_L$ of the load (you can alternatively express the load in terms of its impedance).

\[ Y_L \]

\[ Z_0 = 50\Omega \quad Z_m = 50\Omega \quad Z_1 = 100\Omega \]

short circuit stub with $Z_0 = 50\Omega$ and $\ell = \lambda/8$