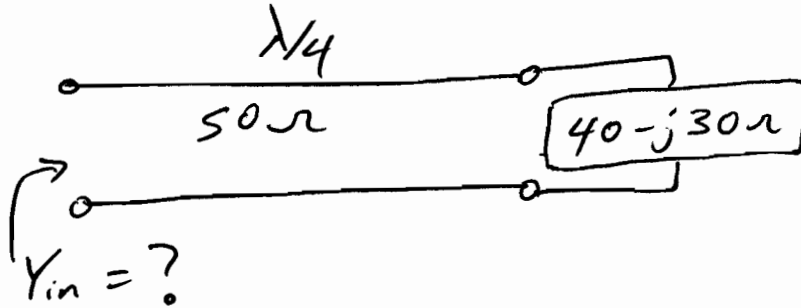


- 11.43 A 50Ω coaxial cable is $\lambda/4$ long and is terminated by a load $40 - j30 \Omega$. Use the Smith chart to find the input admittance Y_{in} .



Normalize $Z_L = 40 - j30 \Omega$ to $Z_0 = 50 \Omega$

$$z_L = \frac{40 - j30}{50} = \underline{0.8 - j0.6 \Omega}$$

and plot on Smith Chart. Draw a circle, centered on Smith Chart, through z_L .

* Draw line passing through center of Smith Chart and z_L and the circle

* Read $y_L = 0.8 + j0.6 S$ at point where line passes through circle $\pm 180^\circ$ from z_L

* Move 0.25λ "WAVELENGTHS TOWARD

GENERATOR" to arrive at $\underline{y_{in} = 0.8 - j0.6 S}$

$$Y_{in} = y_{in}(Z_0^{-1}) = 0.8 - j0.6 \left(\frac{1}{50}\right)$$

$$\underline{Y_{in} = 0.016 - j0.012 S}$$

Simple Smith Chart

Problem 11.43

$$Z_0 = 50 \Omega$$

