\[ X_c = \frac{1}{2\pi F_c} \]
\[ (100\times22.5)(2\pi) = \frac{1}{2} \]
\[ c = 70.74\ m^{-1} \]
\[ f_{eq} \text{ of } y_p \text{ is } 100\ MHz \]
\[ \lambda = \frac{0.8(300\times10^6)}{\text{100} \times 10^6} = 2.4\ m \]

Normalized load is \[ \frac{30 - j22.5}{75} = 0.4 - j0.3 \]

Find and plot load point

(a) 1st length is \[ 0.33\lambda - 0.196\lambda = 0.141\lambda \] or \[ (2.4)(0.141) = 0.3384\ \text{meters} \]

(b) 2nd length is \[ 0.5 - (0.196 - 0.196) = 0.408\lambda \] \[ 1.123\ m \]

(c) Showing inductive susceptance of \[ = j1.05 \]

Real to cancel with \[ j1.05 \] capacitive susceptance \[ 0.3782\lambda = 0.908\ m \]

\[ \frac{0.908\ m}{214\ m} = 3,783\ \text{ns} \]