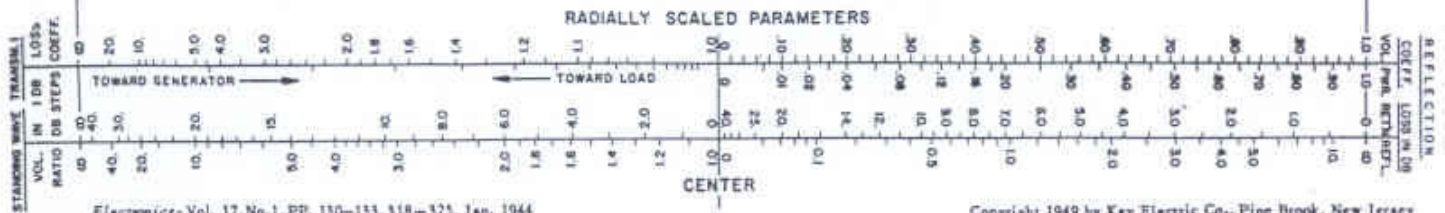
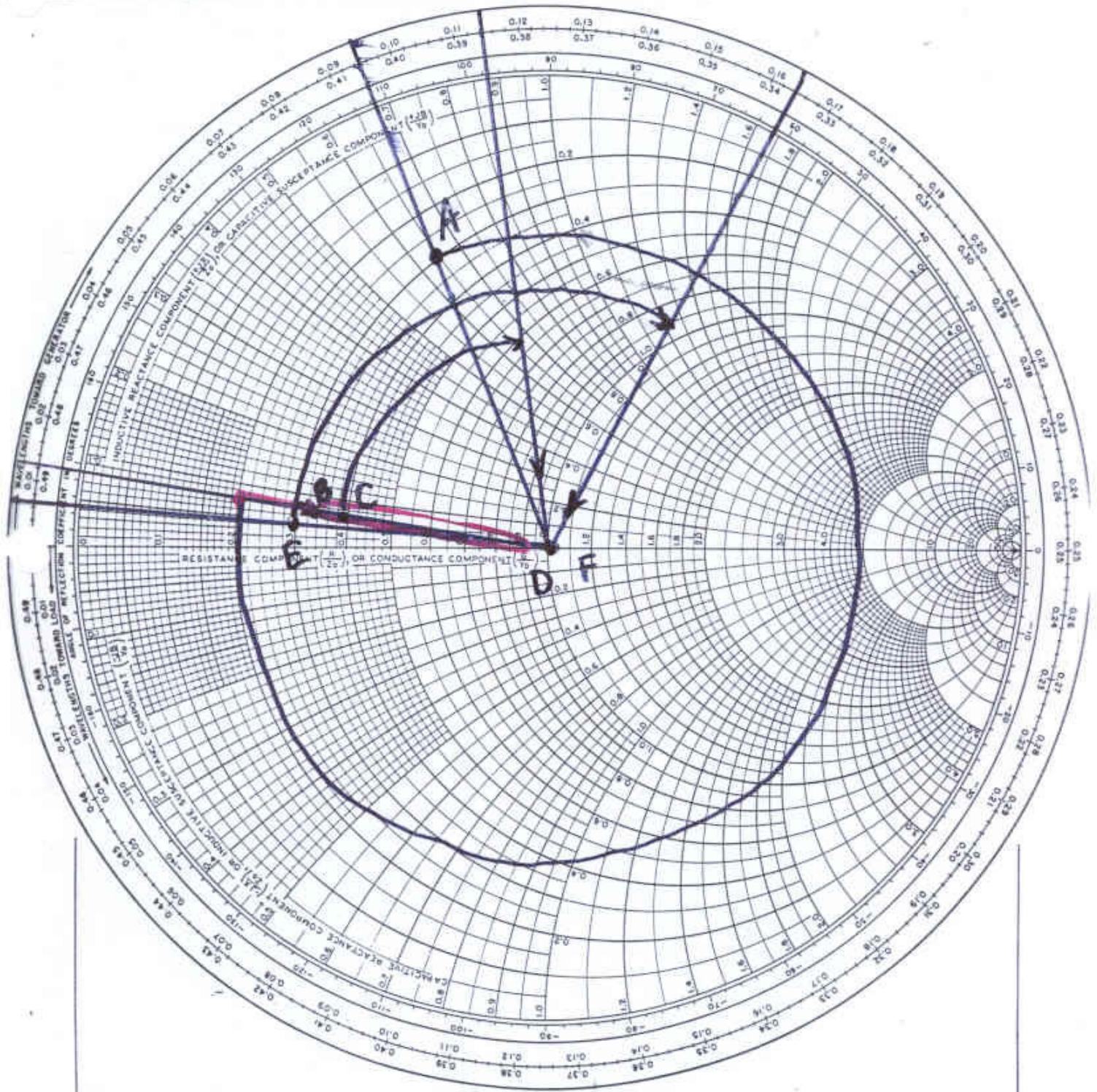


Review #2  
 Prob. #7





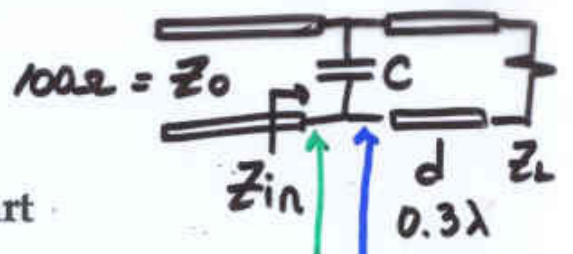
# Example: Adding || ckt. elements

1)  $Z_L = 50 + j50 \Omega$   
 $Z_1 = 1/2 + j1/2$

3) Rotate  $0.3\lambda$

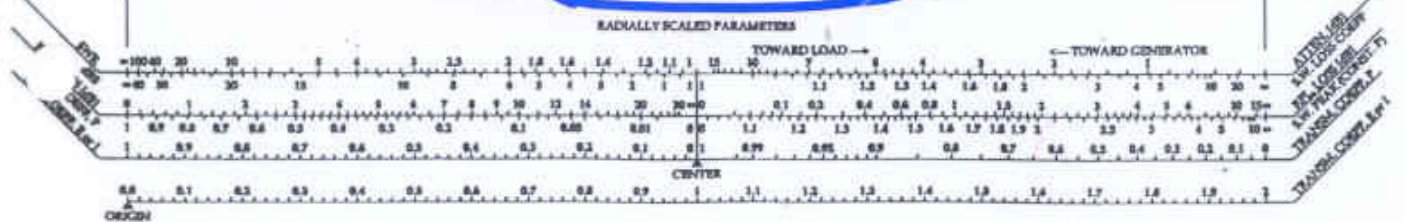
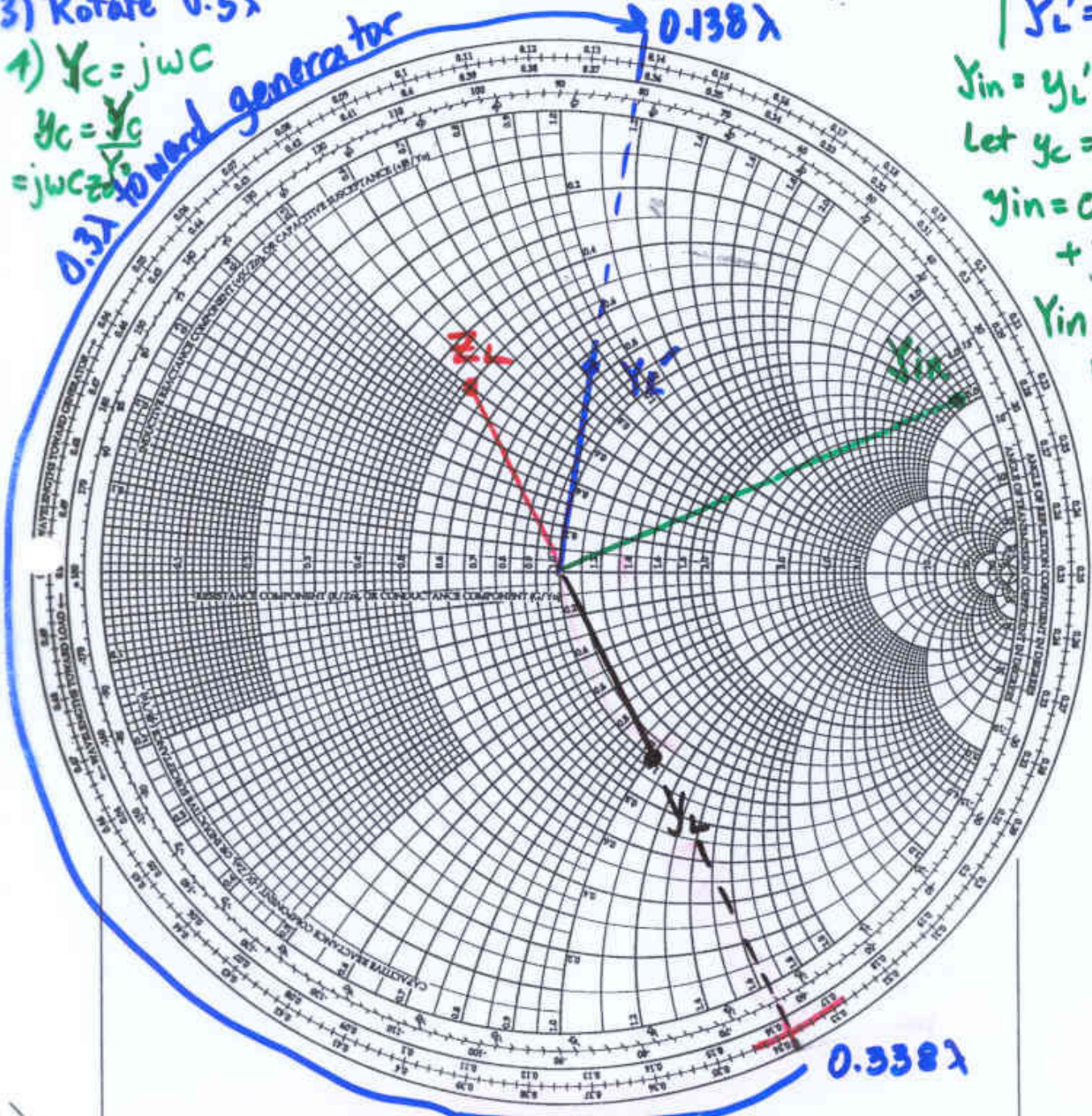
1)  $Y_C = j\omega C$   
 $Y_C = \frac{Y_0}{Z_1}$   
 $= j\omega C Z_1$

*0.3λ toward generator*



## The Complete Smith Chart Black Magic Design

$Y_L' = 0.75 + j0.85$   
 $Y_{in} = Y_L' + Y_C$   
 Let  $Y_C = j4.0$   
 $Y_{in} = 0.75 + j4.85$   
 $Y_{in} = Y_{in} Y_0$   
 $= \frac{Y_{in}}{Z_0}$



# Example: Single Stub Matching

1)  $Z_L = 40 - j100$      $z = 0.4 - j1$

$Y_L =$

2) Rotate to  $r_L = 1.0$

$Y_L' = 1 + j1.9$

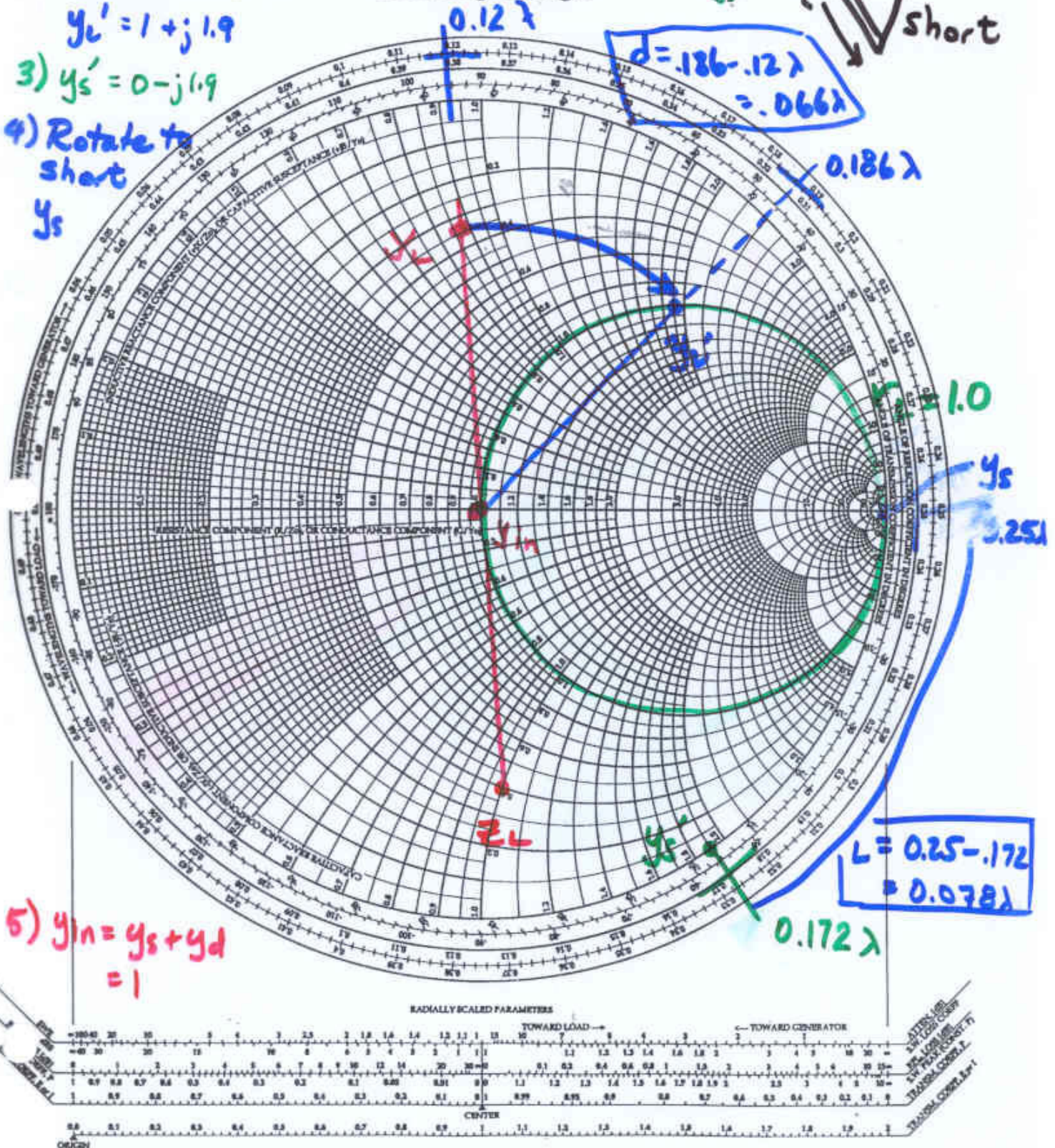
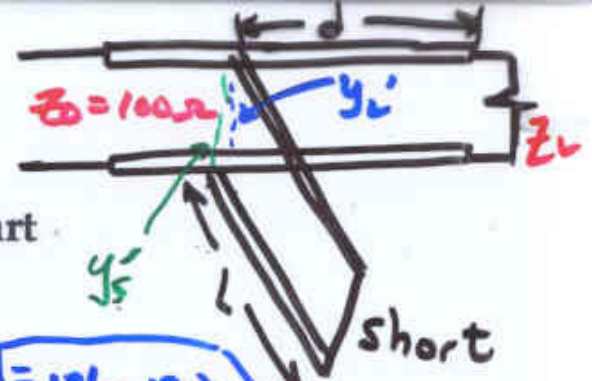
3)  $Y_S' = 0 - j1.9$

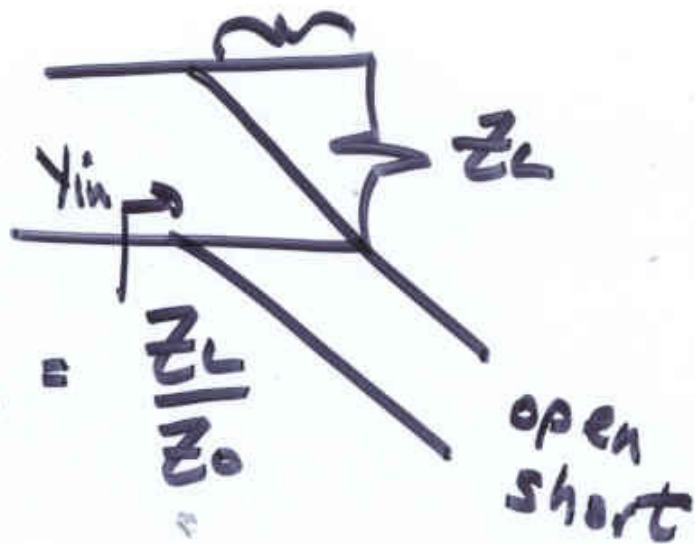
4) Rotate to short

$Y_S$

5)  $Y_{in} = Y_S + Y_L$   
 $= 1$

The Complete Smith Chart  
Black Magic Design





1. norm.  $Z_L = \frac{Z_L}{Z_0}$
2. plot
3. convert to  $Y_L \ll$  For series stub omit step.
4. rotate TNG to matching circle  $Y_L' = 1 + jX$  (d)
5.  $Y_{in} = Y_L' + Y_s$   
 $Y_s = Y_{in} - Y_L' = -jX \rightarrow$  lumped element

6. Plot  $Y_s$
7. Plot  $Y_{open}$  or  $Y_{short}$

Rotate from  $Y_s$  TNL to  $Y_{open}, Y_{short}$

