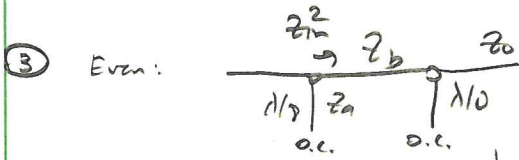
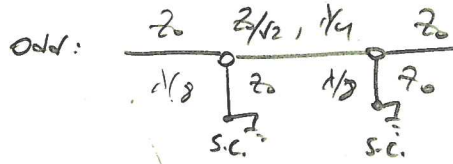
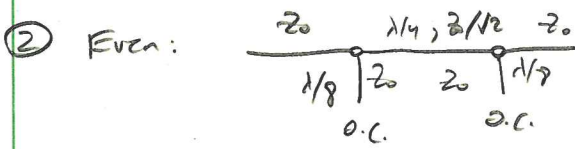


① See lecture notes or text.



$$Y_L = \frac{1}{Z_0} + j/Z_a$$

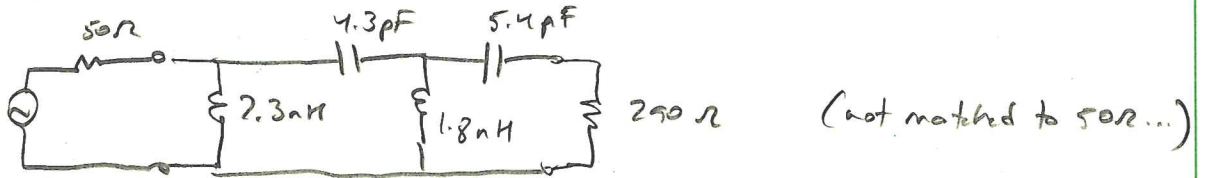
$$Z_{in}^2 = \frac{Z_{line}^2}{Z_{load}} = Z_0^2 \left(\frac{1}{Z_0} + \frac{j}{Z_a} \right)$$

$$Y_{in}^e = \frac{1}{Z_{in}} + \frac{1}{Z_{oc}^{stub}} = \frac{1}{Z_0^2 \left(\frac{1}{Z_0} + \frac{j}{Z_a} \right)} + \frac{j}{Z_a}$$

Odd: $Y_{in}^o = Y_{in}^e^*$ (complex conjugate) due to stubs jZ_a instead of $-jZ_a$

Match: $Z_{in}^o = Z_{in}^e = Z_0 \Rightarrow Z_b = \frac{Z_0 Z_a}{\sqrt{Z_0^2 + Z_a^2}}$ (equate real and/or imaginary parts)

④ $|w_c/w| = 1 \Rightarrow n = 4$ from text



Plot: $1 + \cos(4 \cos^{-1}(f_c/f))$ or plot Γ_{in}

⑤ See notes.