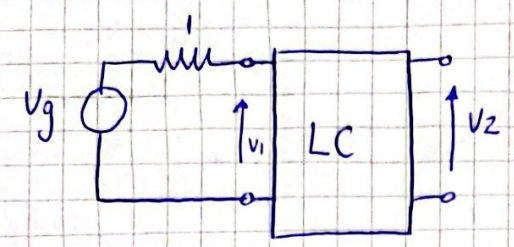
Tarea semanal 12



$$T(\$) = \frac{V_2}{V_g} = \frac{K \cdot \$(\$^2 + 1/16)}{\$^3 + 2\cdot\$^2 + 2\$ + 1}$$

a) Sintetizar cuadripolo pasivo sin perdidas.

b) Verificar la transferencia

c) Hallar el valor de K.

$$\frac{V2}{Vg} = \frac{z_{11}}{z_{11}+Rg} \cdot \frac{z_{21}}{z_{11}} = \frac{z_{21}}{z_{11}+Rg} \rightarrow \frac{z_{21}}{z_{11}+1} = \frac{V_2}{Vg}$$

como $I_2 = 0$ el ultimo elemento tiene que ir en derivación

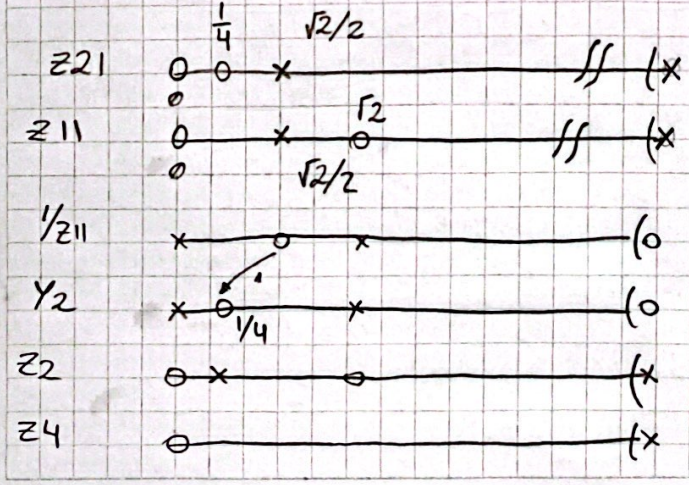
$$K \cdot \frac{\$^3 + 1/16\,\$}{\$^3 + 2\$^2 + 2\$ + 1}$$

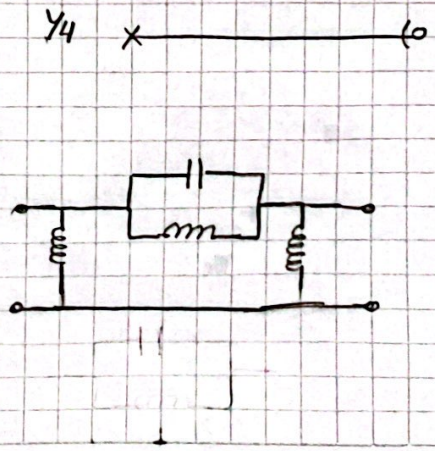
$$z_{21} \rightarrow \frac{\$^3 + 1/16\,\$}{\$^3 + 2\$}$$

$$\frac{\$^3 + 1/16\,\$}{2\$^2 + 1}$$

elijo esta

$$z_{11} = \frac{\$^3 + 2\$}{2\$^2 + 1}$$





$$\frac{1}{Z_1} = \frac{2s^2+1}{s(s^2+2)}$$

$$Y_2 = \frac{2s^2+1}{s(s^2+2)} - \frac{K_{\infty 1}}{s}$$

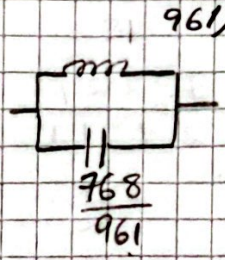
$$K_{\infty 1} = s \cdot \frac{2s^2+1}{s(s^2+2)}\Big|_{s^2=-\frac{1}{16}} = \frac{14}{31} \rightarrow L_1 = \frac{31}{14}$$

$$Y_2 = \frac{2s^2+1}{s(s^2+2)} - \frac{\frac{14}{31}}{s} = \frac{2s^2+1 - \frac{14}{31}s^2 - \frac{28}{31}}{s(s^2+2)}$$

$$Y_2 = \frac{\frac{48}{31}s^2 + \frac{3}{31}}{s(s^2+2)} = \frac{48}{31}\frac{\left(s^2+\frac{1}{16}\right)}{s(s^2+2)}$$

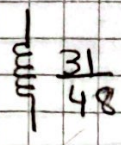
$$Z_2 = \frac{31}{48}\frac{s(s^2+2)}{s^2+1/16}$$

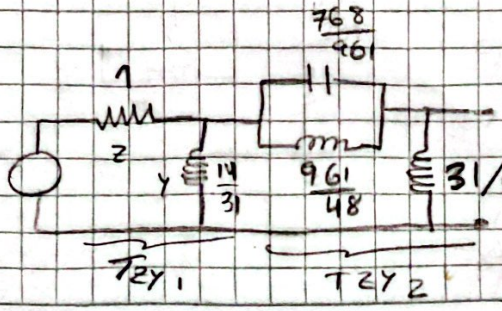
$$Z_{\infty 1} = \lim_{s^2 \to -\frac{1}{16}} \frac{31}{48}\frac{s^2+1/16}{s} \cdot \frac{s(s^2+2)}{s^2+1/16} = \frac{961}{768}$$



$$Z_4 = \frac{31}{48}\frac{s(s^2+2)}{s^2+1/16} - \frac{31/16 \cdot s}{s^2+1/16} = \frac{31}{48}\cdot\frac{s^3+2s-31/16\,s}{s^2+1/16}$$

$$= \frac{31}{48}\cdot\frac{s\cdot(s^2+1/16)}{s^2+1/16} \qquad Y_4 = \frac{31}{48s}$$





$k = 1$