5) 6) $\frac{V_2}{V_1} = \frac{s^2+1}{2s^2+1} = \frac{Z_{21}}{Z_{11}}$

$Z_{11} = \frac{2s^2+1}{s(s^2+\frac{2}{3})}$

$Y_2 = \frac{s(s^2+\frac{2}{3})}{2s^2+1} - K_\infty' s$

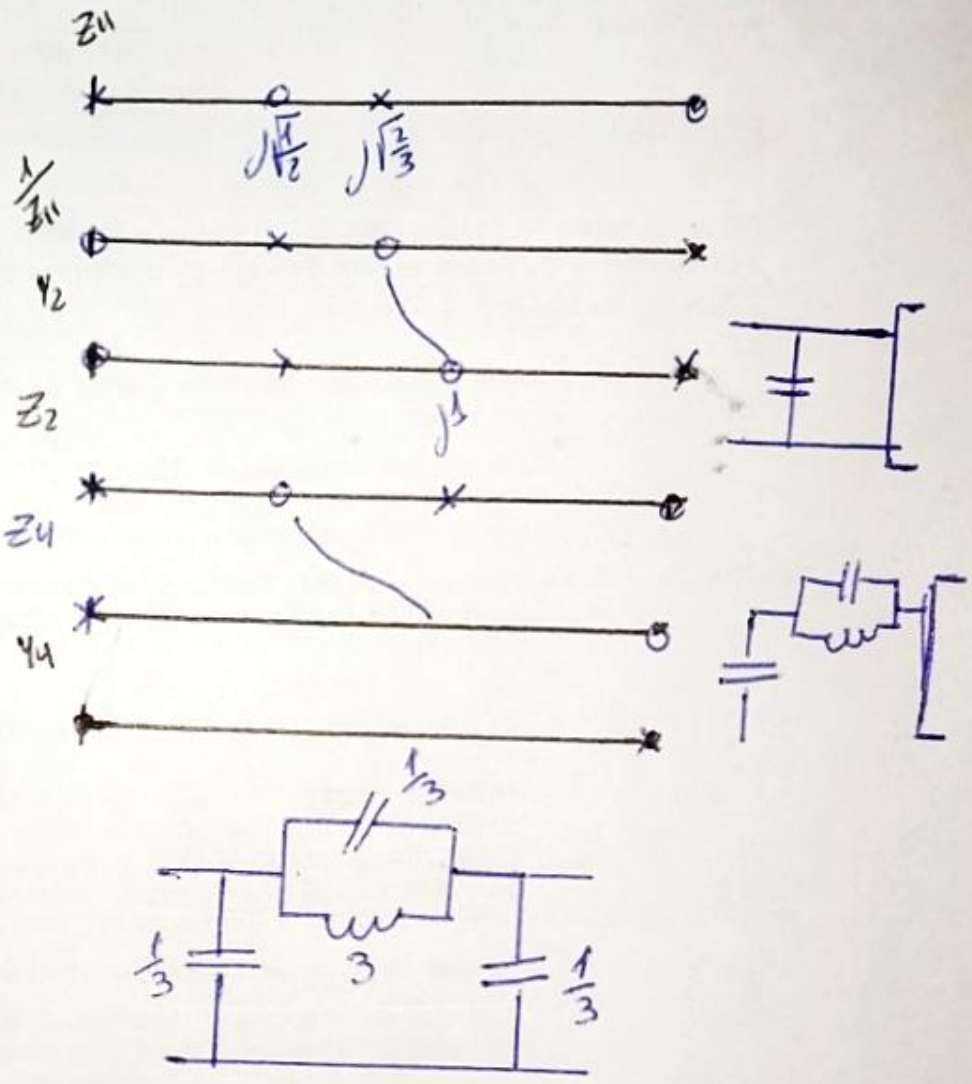
$K_\infty' = \left.\frac{(s^2+\frac{2}{3})}{2s^2+1}\right|_{s^2=-1} = \frac{1}{3}$

$Y_2 = \frac{s^3+\frac{2}{3}s - \frac{2}{3}s^3 - \frac{1}{3}s}{2s^2+1}$

$Y_2 = \frac{\frac{1}{3}(s^2+1)s}{2s^2+1}$

$Z_4 = \frac{3(2s^2+1)}{s(s^2+1)} - \frac{\overbrace{2K_1}^{3} s}{(s^2+1)}$

$Z_4 = \frac{3(s^2+1)}{s(s^2+1)} = \frac{3}{s}$



$2K_1 = \lim_{s^2 \to -1} \frac{s^2+1}{s} Z_2(s) = 3$

$Y_4 = \frac{1}{3}s$

Verificacion

$-Y_{21} = \frac{s}{3} + \frac{1}{3s} = \frac{s^2+1}{3s}$

$Y_{22} = \frac{s}{3} + \frac{s}{3} + \frac{1}{3s} = \frac{2s^2+1}{3s}$

$\frac{V_2}{V_1} = \frac{-Y_{21}}{Y_{22}} = \frac{s^2+1}{2s^2+1}$

a) $\frac{V_2}{V_1} = \frac{-Y_{21}}{Y_{22}}$ $\quad Y_{22} = \frac{2\$^2+1}{\$(\$^2+\frac{2}{3})}$

$\frac{1}{3}$

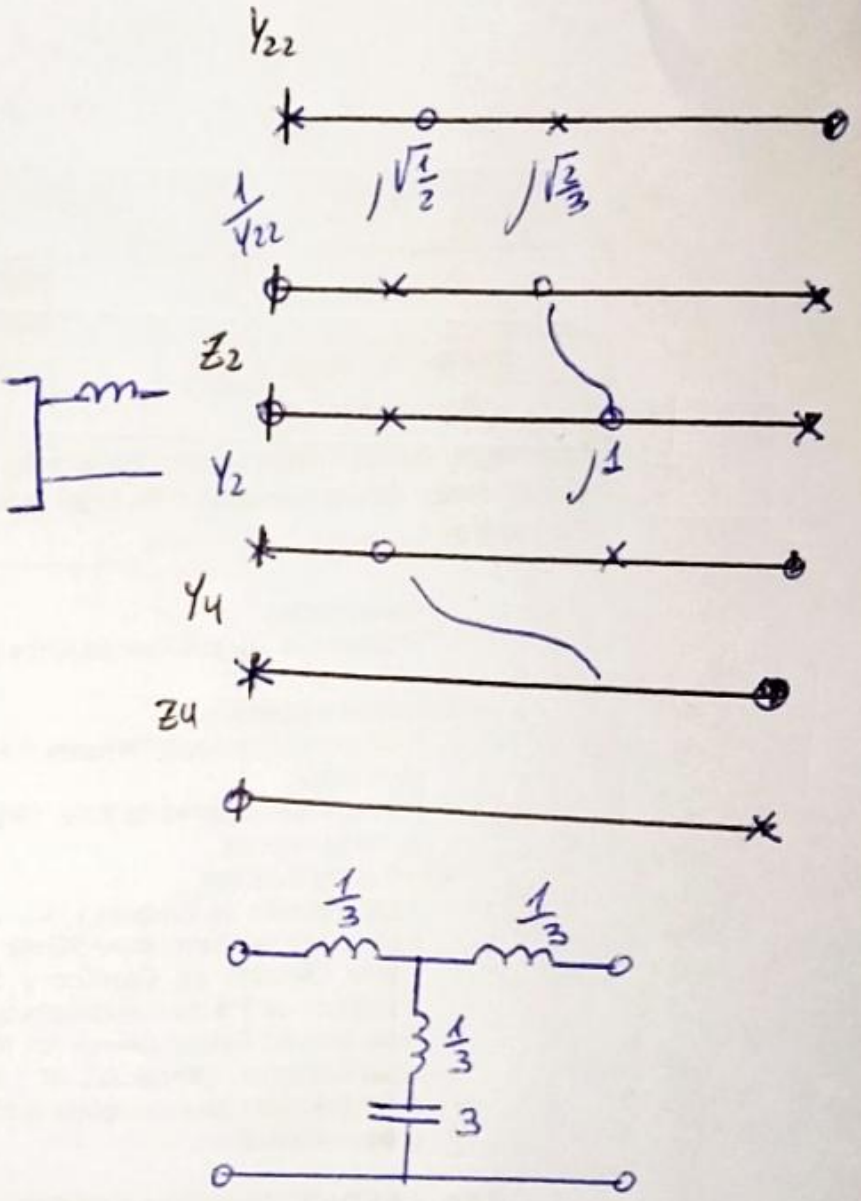
$Z_2 = \frac{\$(\$^2+\frac{2}{3})}{2\$^2+1} - K_\infty \$$

$Z_2 = \frac{\frac{1}{3}(\$^2+1)\$}{2\$^2+1}$

3

$Y_4 = \frac{3(2\$^2+1)}{(\$^2+1)\$} - \frac{2K_1\$}{\$^2+1}$

$Y_4 = \frac{3}{\$}$ $\quad Z_4 = \frac{\$}{3}$



Verificación

$Z_{12} = \frac{\$}{3} + \frac{1}{3\$} = \frac{\$^2+1}{3\$}$

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

$\frac{V_2}{V_1} = \frac{Z_{12}}{Z_{11}} = \frac{\$^2+1}{2\$^2+1}$ ✓