1

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

[illegible] $\Rightarrow$ $$Y(s) = \frac{s(s^2+1)}{(s^2+3)(s^2+1)} = \sum \frac{2k_i}{(s^2+\omega_i^2)}$$

$$\underset{j0}{*} \longrightarrow \underset{j1}{\circ} \longrightarrow \underset{j\sqrt{2}}{\times} \longrightarrow \underset{j\sqrt{3}}{\circ} \longrightarrow \underset{j\infty}{\times}$$

aquí

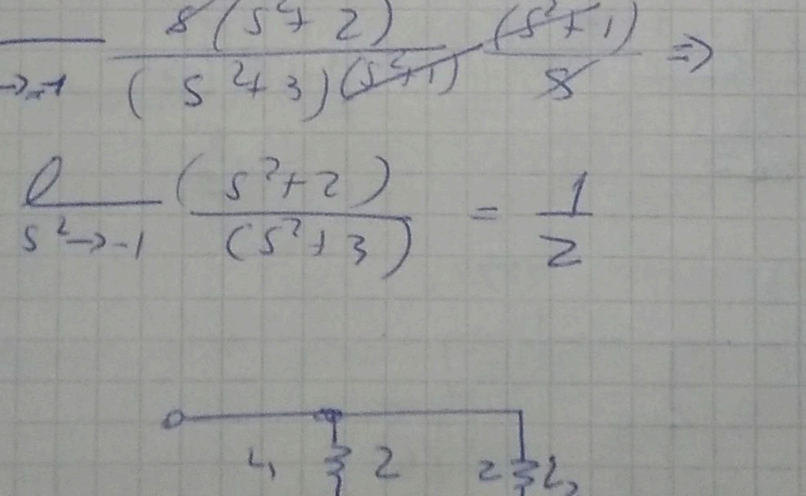
$k_\infty, k_0 = 0$.

$$2k_1 = \lim_{s^2 \to -3} \frac{(s^2+2)\cancel{s}}{\cancel{(s^2+3)}(s^2+1)} \frac{\cancel{(s^2+3)}}{\cancel{s}}$$

$$2k_1 = \frac{1}{2} \Rightarrow k_1 =$$

$$2k_2 = \lim_{s^2 \to -1} \frac{\cancel{s}(s^2+2)}{(s^2+3)\cancel{(s^2+1)}} \frac{\cancel{(s^2+1)}}{\cancel{s}} \Rightarrow$$

$$2k_2 = \lim_{s^2 \to -1} \frac{(s^2+2)}{(s^2+3)} = \frac{1}{2}$$



Surgen de los ω_i

1) Cauer 1 : remoción en ∞

$$s^2+4s^2+3 \;\big|\; \underline{s^3+2s}$$
$$\underline{-2s^2} \qquad \boxed{s}$$
$$2s^2+3 \qquad 1 \text{ —m—}$$

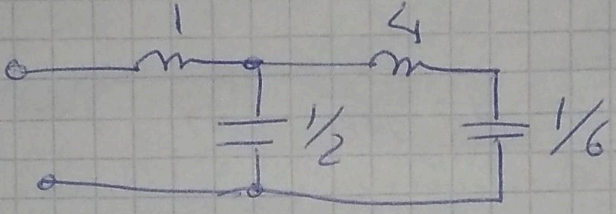
$\rightarrow$

$$s^3+2s \;\big|\; \underline{2s^2+3}$$
$$-\frac{3s}{2} \qquad \boxed{\frac{1}{2}s}$$
$$\frac{1}{2}s \qquad \frac{\ \ }{1}$$

$\rightarrow$

$$2s^2+3 \;\big|\; \underline{\tfrac{1}{2}s}$$
$$\cancel{+3} \qquad \boxed{4s} \text{ —m—}$$

$$\tfrac{1}{2}s \;\big|\; \underline{3}$$
$$0 \qquad \boxed{\frac{1}{6}s} \qquad \frac{\ \ }{1}$$



2) Cauer 2 remoción en 0

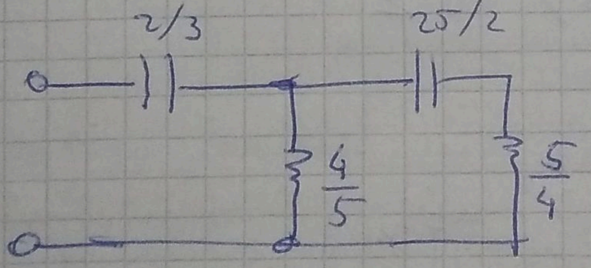
$$3+4s^2+s^4 \;\big|\; \underline{2s+s^3}$$
$$\frac{5}{2}s^2+s^4 \qquad \boxed{\frac{3}{2s}}$$

$\rightarrow$

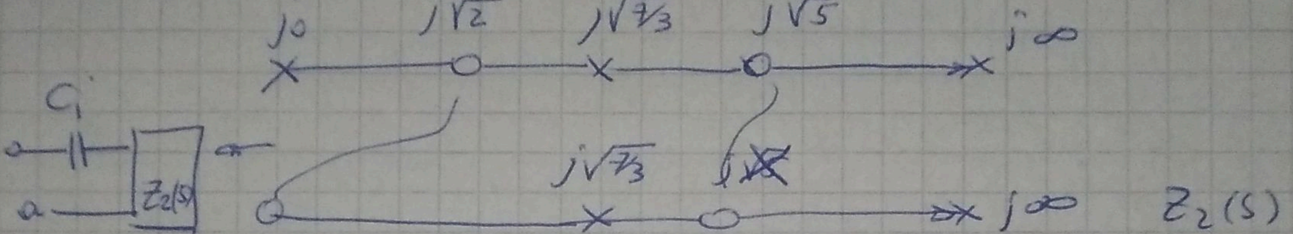
$$2s+s^3 \;\big|\; \underline{\tfrac{5}{2}s^2+s^4}$$
$$\frac{4}{5}s^3 \qquad \boxed{\frac{4}{5s}}$$

$$\frac{5}{2}s^2+s^3 \;\big|\; \underline{\tfrac{4}{5}s^3}$$
$$s^4 \qquad \frac{25}{2s^3}$$

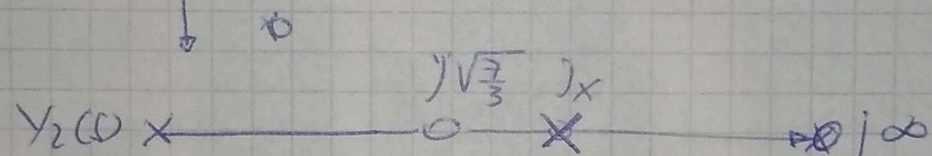
$$\frac{4}{5}s^3 \;\big|\; \underline{s^4}$$
$$\frac{5}{4s}$$

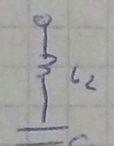


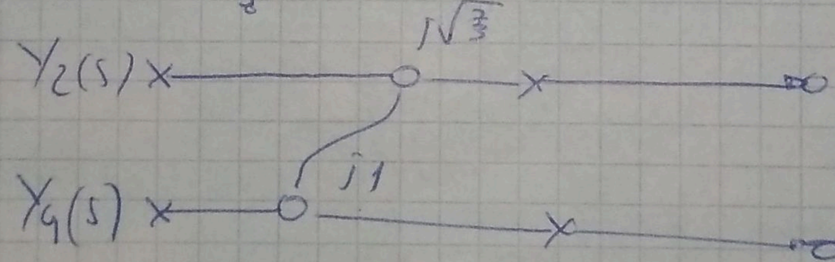
(2) $Y(s) = \dfrac{3s(s^2+7/3)}{(s^2+2)(s^2+5)} \longrightarrow Z(s) = \dfrac{(s^2+2)(s^2+5)}{3s(s^2+7/3)}$



$$\begin{array}{l|l} 10 + 7s^2 + s^4 & 7s + 3s^3 \\ \hline -\frac{30}{7}s^2 & \boxed{\frac{10}{7s}} \longrightarrow C_1 = \frac{7}{10} \\ \frac{19}{7}s^2 + s^4 & \end{array}$$

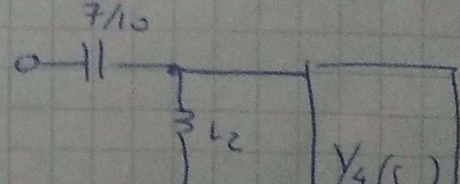


Aquí queremos extraer  tal que resuena a 1 r/s



Ese tanque corresponde a la forma $\dfrac{s}{s^2+1}$ $\left(\omega_i^2 = 1, \ \dfrac{2k_i}{\omega_i} = 1 \ / \ L_2C_2 = 1\right)$

$$Y_4(s) = \overbrace{\frac{s^4 + 19/7\, s^2}{3s^3 + 7s}}^{Y_2(s)} - \frac{s}{(s^2+1)}$$



$$Y_4(s) = \frac{s(7s^4 + 5s^2 - 30)}{7(s^2+1)(3s^2+7)}$$ no es FRP ⇒ no se puede sintetizar otro dipolo no disipativo