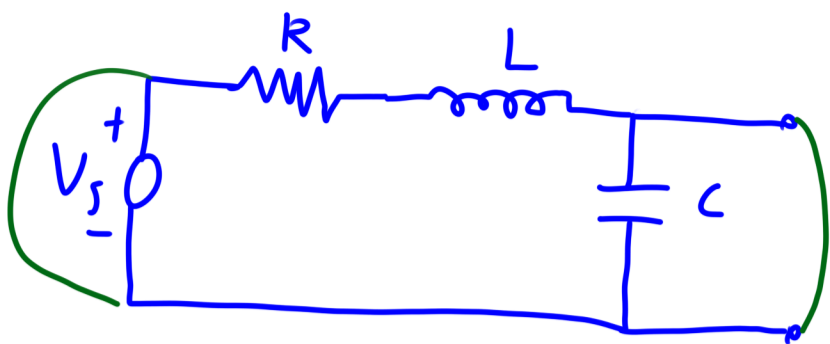
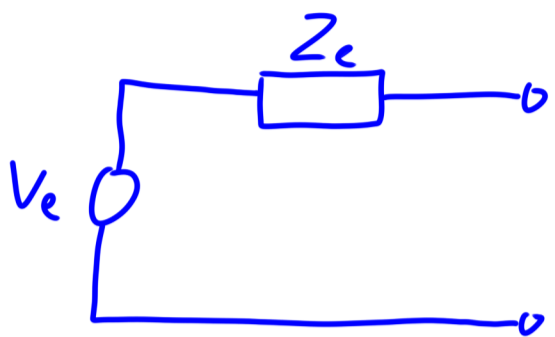


RW 13.12



a) Generate a Thevenin equivalent source

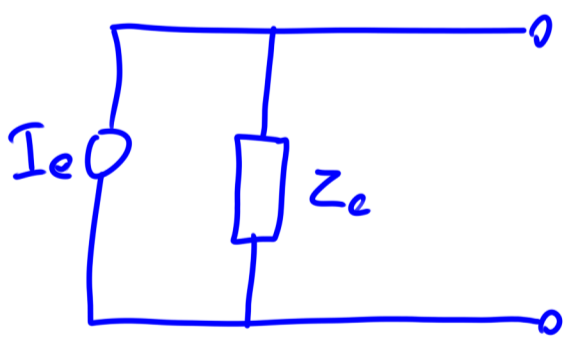


$$Z_{RL} = Z_R + Z_L$$

$$Z_e = \frac{1}{\frac{1}{Z_R + Z_L} + \frac{1}{Z_C}} = \frac{1}{\frac{1}{R + Ls} + Cs} = \frac{R + Ls}{1 + RCs + LCs^2}$$

$$V_e = V_s \frac{Z_e}{Z_R + Z_L + Z_e} = V_s \frac{\frac{1}{Cs}}{R + Ls + \frac{1}{Cs}} = V_s \frac{1}{RCs + LCs^2 + 1}$$

b) Generate a Norton equivalent source



$Z_e$  same as part a

$$I_e = \frac{V_s}{Z_{RL}} = \frac{V_s}{R + Ls}$$

$$Z_{RL} = Z_R + Z_L \quad V_s = Z_{RL} I_e$$

$$V_e = Z_e I_e$$

$$V_s \frac{1}{RCs + LCs^2 + 1} = \frac{\cancel{R + Ls}}{1 + RCs + LCs^2} \frac{V_s}{\cancel{R + Ls}}$$