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Tutorial 2
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$$V(z,p) = \frac{Z_c(p)}{Z_g(p)+Z_c(p)} E_g(p) \frac{e^{-\gamma(p) z} + \Gamma_L(p) e^{-\gamma(p)(2\ell - z)}}{1 - \Gamma_g(p)\Gamma_L(p) e^{-2\gamma(p)\ell}}$$

$$I(z,p) = \frac{1}{Z_g(p)+Z_c(p)} E_g(p) \frac{e^{-\gamma(p) z} - \Gamma_L(p) e^{-\gamma(p)(2\ell - z)}}{1 - \Gamma_g(p)\Gamma_L(p) e^{-2\gamma(p)\ell}}$$

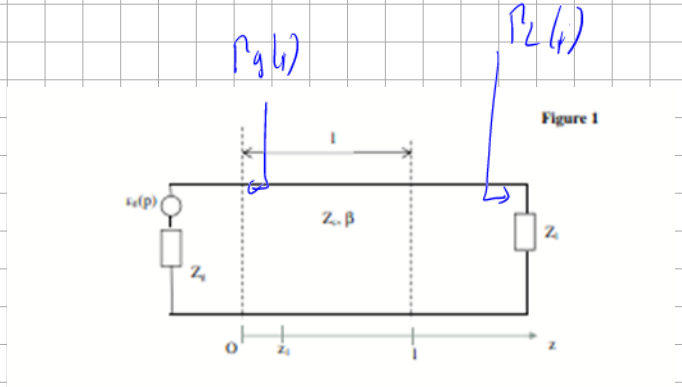


Figure 1

$$\Gamma_g(p) = \frac{Z_g(p) - Z_c(p)}{Z_g(p) + Z_c(p)} = 0$$

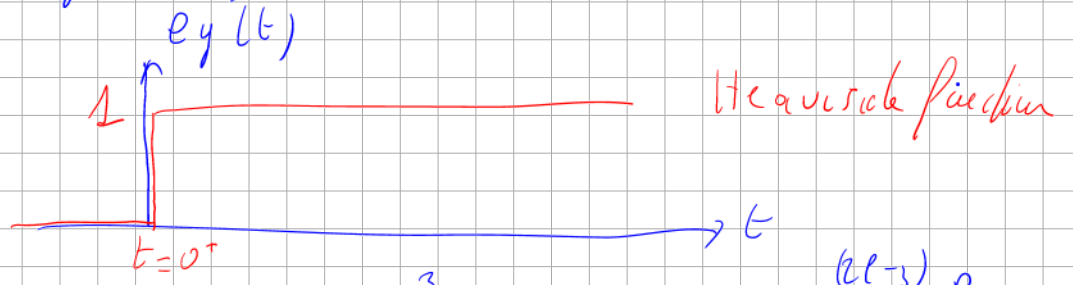
$$\Gamma_L(p) = \frac{Z_L(p) - Z_c(p)}{Z_L(p) + Z_c(p)} = 1$$

$$V(z,p) = \frac{E_g(p)}{2}\left(e^{-\gamma(p) z} + e^{-\gamma(p)(2\ell - z)}\right)$$

$$\gamma(p) = \frac{p}{v} \qquad p = j\omega \qquad \gamma = j\beta = j\frac{\omega}{v}$$

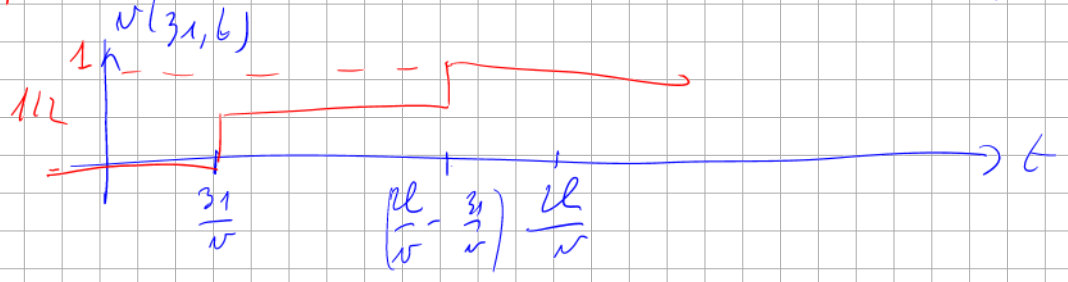
$$f(t) \xrightarrow{\mathcal{L}} F(p)$$

$$f(t - t_0) \xrightarrow{\mathcal{L}} F(p)\, e^{-p t_0}$$

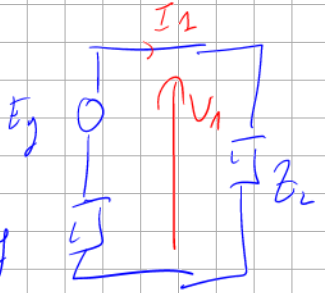



$$V(z,p) = \frac{1}{2} E_g(p)\, e^{-\frac{z}{v}p} + \frac{1}{2} E_g(p)\, e^{-\frac{(2\ell - z)}{v}p}$$

$$v(z,t) = \frac{1}{2} e_g\left(t - \frac{z}{v}\right) + \frac{1}{2} e_g\left(t - \left(\frac{2\ell - z}{v}\right)\right)$$



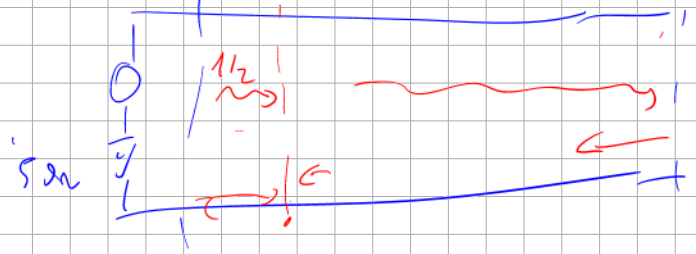




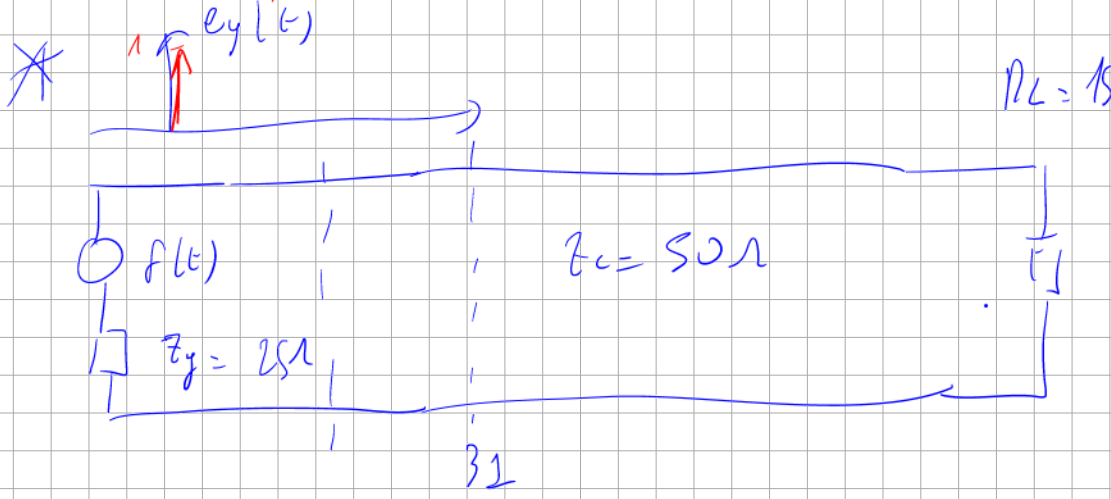

$$E_g = (Z_g + Z_L)\, I_1$$

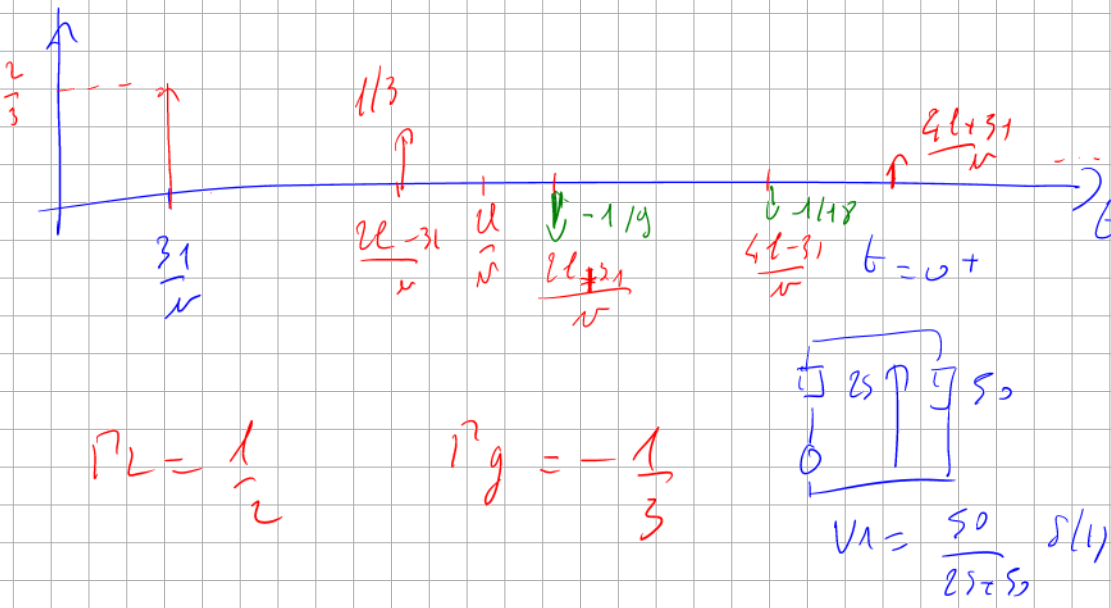
$$V_1 = Z_L\, I_1$$

$$V_1 = \frac{Z_L}{Z_g + Z_L} E_g$$








$$\Gamma_L = \frac{1}{2}$$

$$\Gamma_g = -\frac{1}{3}$$

$$V_1 = \frac{50}{25 + 50}\,\delta(t)$$