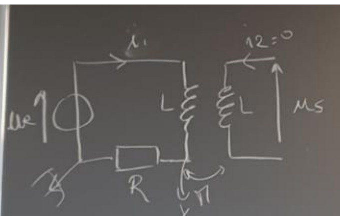

$$u_e = i_1 R + L\frac{di_1}{dt} + M\cancel{\frac{di_2}{dt}}^{=0}$$

$$u_s = L\cancel{\frac{di_2}{dt}}^{=0} + M\frac{di_1}{dt}$$

$$\begin{cases} \underline{u_s} = j\omega M\,\underline{i_1} \\ \underline{u_e} = \underline{i_1}R + j\omega L\,\underline{i_1} = (R + j\omega L)\,\underline{i_1} \end{cases}$$

$$\frac{\underline{u_s}}{\underline{u_e}} = \frac{j\omega M}{R + j\omega L} = \underline{H}(\omega)$$

$$\boxed{|\underline{H}(\omega)|^2 = \frac{(\omega M)^2}{R^2 + (\omega L)^2}}$$

$$|\underline{H}(\omega)|^2 = \frac{1}{\left(\frac{R}{\omega M}\right)^2 + \left(\frac{L}{M}\right)^2}$$

$$\frac{1}{|H|^2} = f\left(\frac{1}{\omega^2}\right)$$

$$\left(\frac{R}{M}\right)^2 = 1{,}5 \cdot 10^5 \,(\text{krad} \cdot s^{-1})^2$$
$$= 1{,}5 \cdot 10^{11} \,(\text{rad} \cdot s^{-1})^2$$

$$M = \sqrt{\frac{(2 \cdot 10^3)^2}{1{,}5 \cdot 10^{11}}}$$
$$= \sqrt{10^{-5}} = 10^{-2{,}5}\, H \approx 0{,}05\, mH$$

$$\left(\frac{L}{M}\right)^2 = 9$$

$$L = \sqrt{9}$$