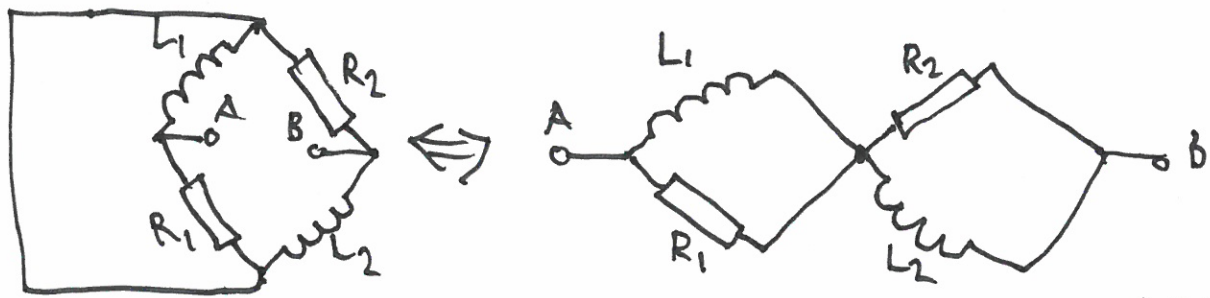


B 1.13) $R_1 = 2.0 \Omega$, $R_2 = 2.0 \Omega$, $L_1 = 1.0 \text{ mH}$, $L_2 = 1.0 \text{ mH}$

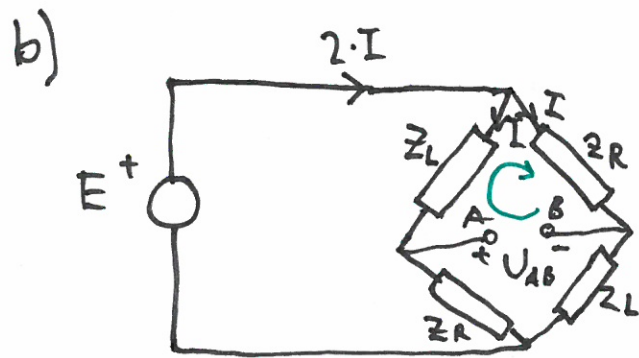
$e(t) = 10\sqrt{2} \cdot \sin(2000\pi \cdot t) \text{ V}$

a) Eliminera spänningskällan: (måste vara given i a-uppgiften för Z_i i Ω)



$$Z_i = Z_{L_1} // Z_{R_1} + Z_{R_2} // Z_{L_2} = 2 \cdot \frac{j\omega L_1 R_1}{j\omega L_1 + R_1} = 2 \cdot \frac{j 2k\pi 1m \cdot 2}{j \cdot 2k\pi 1m + 2}$$

$$= \frac{j \cdot 4\pi}{1 + j\pi} \approx 3.8 \cdot e^{j \cdot 0.31} \Omega$$



$E = 10\sqrt{2}$

$I = E / (Z_L + Z_R) = \frac{10\sqrt{2}}{2 + j2\pi}$

KVL \Rightarrow

$U_{AB} + Z_L \cdot I - Z_R \cdot I = 0$

$\Rightarrow U_{AB} = (Z_R - Z_L) \cdot I = \frac{10\sqrt{2} \cdot (2 - j2\pi)}{2 + j2\pi} = 10\sqrt{2} \frac{1 - j\pi}{1 + j\pi}$

$\approx 10\sqrt{2} e^{-j \cdot 2.52} \text{ V}$

c) $I_{AB} = U_{AB} / Z_i = \frac{10\sqrt{2} \cdot e^{-j \cdot 2.52}}{3.8 \cdot e^{j \cdot 0.31}} = \underline{\underline{2.7\sqrt{2} \cdot e^{-j \cdot 2.83} \text{ A}}}$