6.31

En spole har en resistans $R := 2\Omega$ og en induktans $L := 20mH$

Spolen tilsluttes $U := 110V,\ f := 50Hz$

Beregn

a)spolens reaktans

b)spolens impedans

c)strømstyrken.

a)spolens reaktans

$X_L := 2\pi \cdot f \cdot L$

$X_L = 6.283\,\Omega$

b)spolens impedans

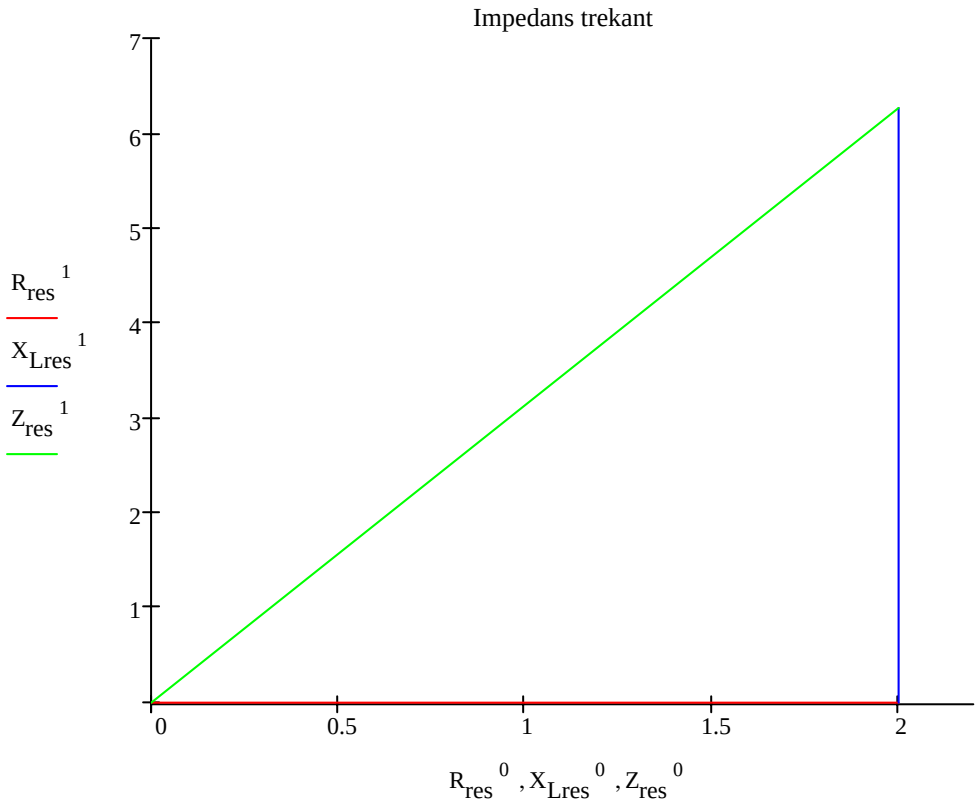
$Z := \sqrt{R^2 + X_L{}^2}$

$Z = 6.594\,\Omega$

c)strømstyrken.

$I := \frac{U}{Z}$

$I = 16.682\,A$


Impedans trekant
7
6
5
4
3
2
1
0
0.5
1
1.5
2
R_{res}^{1}
X_{Lres}^{1}
Z_{res}^{1}
$R_{res}^{0}, X_{Lres}^{0}, Z_{res}^{0}$

kompleks:

$$L_{kom} := 20jmH$$

$$X_{Lkom} := 2\pi \cdot f \cdot L_{kom}$$

$$X_{Lkom} = 6.283i\,\Omega$$

$$Z_{kom} := R + X_{Lkom}$$

$$Z_{kom} = 2 + 6.283i\,\Omega$$

$$\left|Z_{kom}\right| = 6.594\,\Omega$$

$$\arg\left(Z_{kom}\right) = 72.343\,deg$$

$$I_{kom} := \frac{U}{Z_{kom}}$$

$$I_{kom} = 5.06 - 15.896i\,A$$

$$\left|I_{kom}\right| = 16.682\,A$$

$$\arg\left(I_{kom}\right) = -72.343\,deg$$