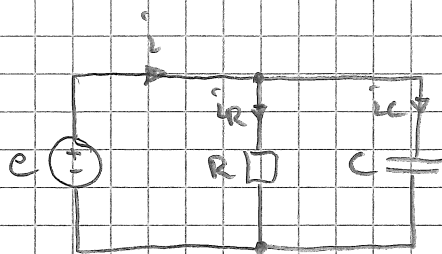


8.10)



$$e = 35,6 \sin(\omega t + 13,8^\circ) \text{ V}$$

$$\omega = 80 \text{ rad/s}$$

$$R = 1,60 \text{ k}\Omega \quad C = 6,20 \mu\text{F}$$

Bestäm i .

KI $i = i_R + i_C$ Med visare: $I = I_R + I_C$

Visare

Amplitud

Fas konstant

E

$$|E| = 35,6 \text{ V}$$

$$13,8^\circ$$

I_R

$$|I_R| = \frac{|E|}{R} = \frac{35,6}{1600} = 22,2 \text{ mA}$$

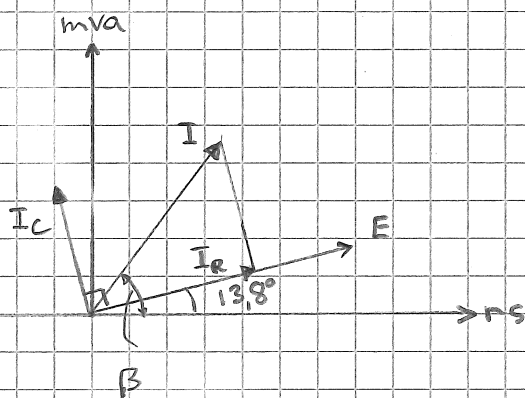
I_R i fas med E

I_C

$$I_C = \frac{|E|}{\frac{1}{\omega C}} = \omega C |E| =$$

I_C 90° före E

$$= 80 \cdot 6,20 \cdot 10^{-6} \cdot 35,6 = 17,7 \text{ mA}$$



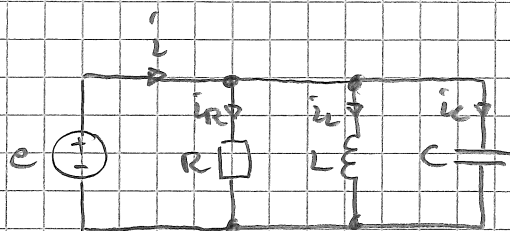
$$1 \text{ cm} \hat{=} 10 \text{ V}$$

$$1 \text{ cm} \hat{=} 10 \text{ mA}$$

Mätning i figur: $\begin{cases} |I| = 28 \text{ mA} \\ \beta = 55^\circ \end{cases} \Rightarrow$

$$\underline{\underline{i(t) = |I| \sin(\omega t + \beta) = 28 \sin(\omega t + 55^\circ) \text{ mA}}}$$

8.12



$$e = 20 \sin \omega t \text{ V}$$

$$\omega = 1000 \text{ rad/s}$$

$$R = 500 \Omega \quad L = 0,40 \text{ H} \quad C = 0,50 \mu\text{F}$$

Bestäm i

KI: $i = i_R + i_L + i_C$ Med visare $I = I_R + I_L + I_C$

Visare

Amplitud

Fas konstant

E

$$|E| = 20 \text{ V}$$

$$0^\circ$$

I_R

$$|I_R| = \frac{|E|}{R} = \frac{20}{500} = 40 \text{ mA}$$

I_R i fas med E

I_C

$$|I_C| = \frac{|E|}{\frac{1}{\omega C}} = \omega C |E| =$$

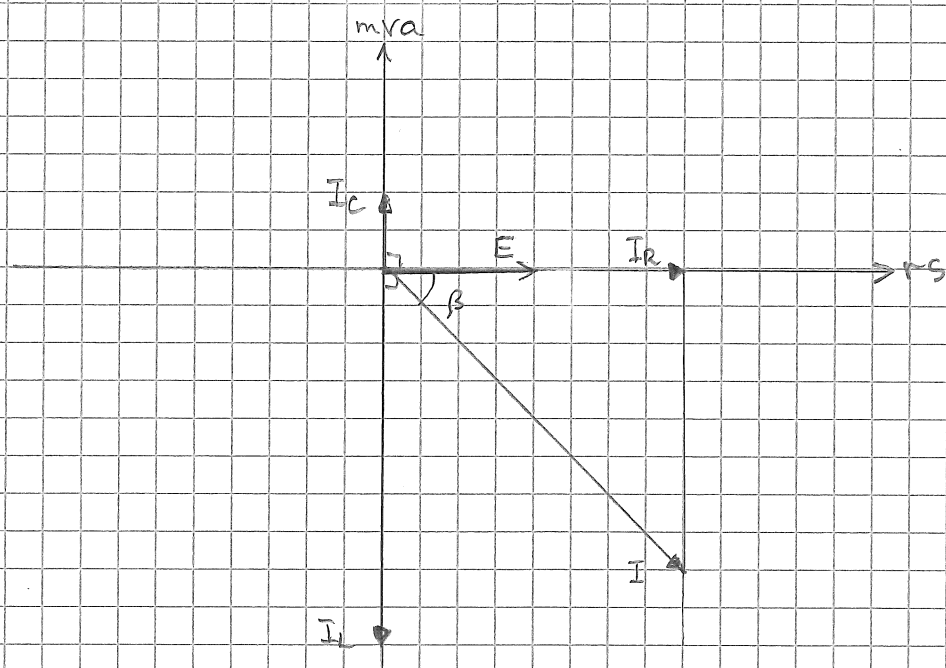
$$= 1000 \cdot 0,50 \cdot 10^{-6} \cdot 20 = 10 \text{ mA}$$

I_C 90° före E

I_L

$$|I_L| = \frac{|E|}{\omega L} = \frac{20}{1000 \cdot 0,4} = 50 \text{ mA}$$

I_L 90° efter E



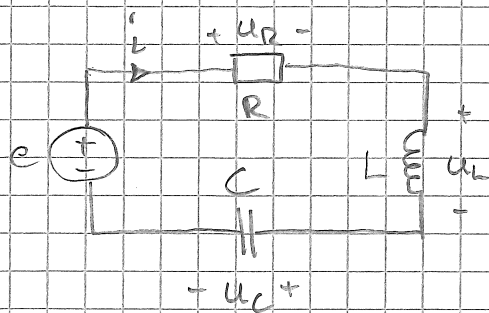
$$|e| \hat{=} 10 \text{ V}$$

$$|e| \hat{=} 10 \text{ mA}$$

Mätning i figur $|I| = 57 \text{ mA}$ $\beta = -45^\circ \Rightarrow$

$$\underline{i(t) = |I| \sin(\omega t + \beta) = 57 \sin(\omega t - 45^\circ) \text{ mA}}$$

8.13



$$i = 12,8 \sin(\omega t + 37,4^\circ) \text{ mA}$$

$$\omega = 2700 \text{ rad/s}$$

$$R = 120 \Omega \quad L = 550 \text{ mH} \quad C = 280 \text{ nF}$$

Bestäm u_L e c

$$\text{KV} \quad e = u_R + u_L + u_C \quad \text{Med visare: } E = U_R + U_L + U_C$$

VisareAmplitudFasvinkel

I

$$|I| = 12,8 \text{ mA}$$

$$37,4^\circ$$

 U_R

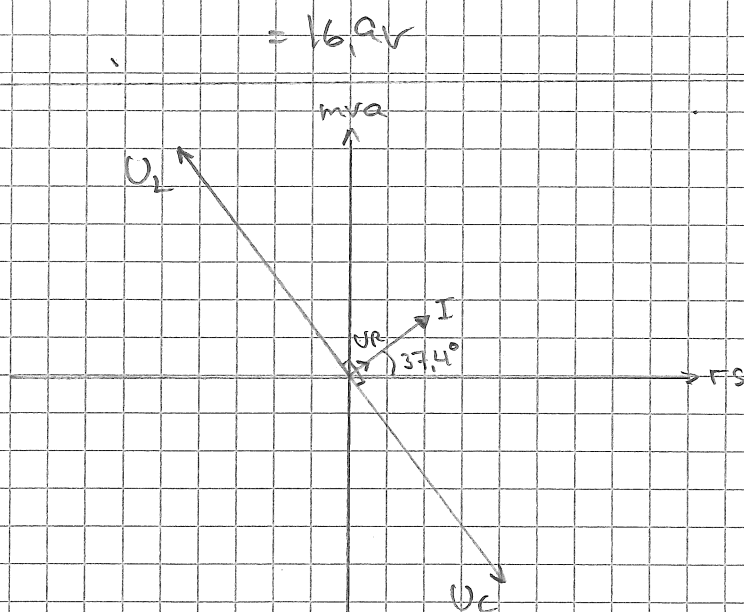
$$|U_R| = R \cdot |I| = 120 \cdot 0,0128 = 1,54 \text{ V}$$

 U_R i fas med I U_L

$$|U_L| = \omega L |I| = 2700 \cdot 0,55 \cdot 0,0128 = 19,0 \text{ V}$$

 U_L 90° före I U_C

$$|U_C| = \frac{1}{\omega C} \cdot |I| = \frac{0,0128}{2700 \cdot 280 \cdot 10^{-6}} = 16,9 \text{ V}$$

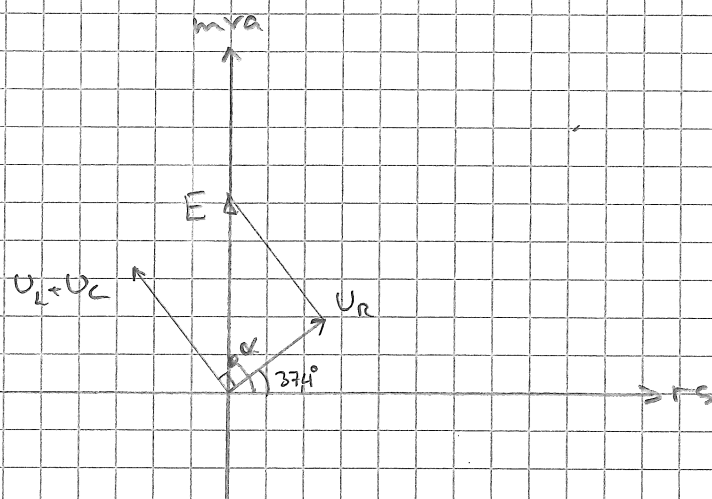
 U_C 90° efter I

$$1 \text{ cm} \hat{=} 10 \text{ mA}$$

$$1 \text{ cm} \hat{=} 5 \text{ V}$$

8.13 forts

$$|U_L| - |U_C| = 19,0 - 16,9 = 2,1 \text{ V}$$



$$I_{cm} = 1 \text{ V}$$

Mätning i figur $\begin{cases} |E| = 2,6 \text{ V} \\ \alpha = 90^\circ \end{cases} \Rightarrow$

$$\underline{\underline{e(t) = |E| \sin(\omega t + \alpha) = 2,6 \sin(\omega t + 90^\circ) \text{ V}}}$$