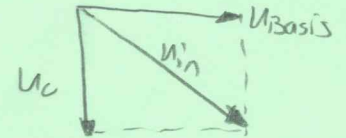


$$f = \frac{1}{T} = \frac{1}{2\text{ms}} = 500\text{Hz}$$

Phasenverschiebung zwischen U_{in} und U_{Basis} : $\alpha = \frac{t_\alpha}{T} \cdot 360 = \frac{0,5\text{ms}}{2\text{ms}} \cdot 360 = 90^\circ$

$$X_{C_1} = \frac{1}{2 \cdot \pi \cdot f \cdot C_1} = \frac{1}{2\pi \cdot 500\text{Hz} \cdot 1\mu\text{F}} = 318,31\Omega$$

$$I_{in} = \frac{\sqrt{U_{in}^2 - U_{Basis}^2}}{X_{C_1}} = \frac{\sqrt{\left(\frac{120\text{mV}}{\sqrt{2}}\right)^2 - \left(\frac{23,5\text{mV}}{\sqrt{2}}\right)^2}}{318,31\Omega} = 267,47\mu\text{A}$$



$$R_{Ersatz} = \frac{1}{\frac{1}{R_{pot}} + \frac{1}{R_1} + \frac{1}{r_{BE}}} = \frac{U_{Basis}}{I_{in}} = \frac{\hat{U}_{Basis}}{2 \cdot \sqrt{2} \cdot I_{in}} = \frac{23,5\text{mV}}{\sqrt{2} \cdot 267,47\mu\text{A}} = 63,57\Omega$$

$$\frac{1}{R_{Ersatz}} = \frac{1}{R_1} + \frac{1}{R_{pot}} + \frac{1}{r_{BE}} \rightarrow \frac{1}{r_{BE}} = \frac{1}{R_{Ersatz}} - \frac{1}{R_{pot}} - \frac{1}{R_1}$$

$$r_{BE} = \frac{1}{\frac{1}{R_{Ersatz}} - \frac{1}{R_{pot}} - \frac{1}{R_1}} = \frac{1}{\frac{1}{63,57\Omega} - \frac{1}{700,4\Omega} - \frac{1}{4,7k\Omega}} = 76,47\Omega$$

Konstruieren Sie maßstäblich das Zeigerdiagramm der Spannungen U_{in} , U_{Xc} und U_{Basis} .

