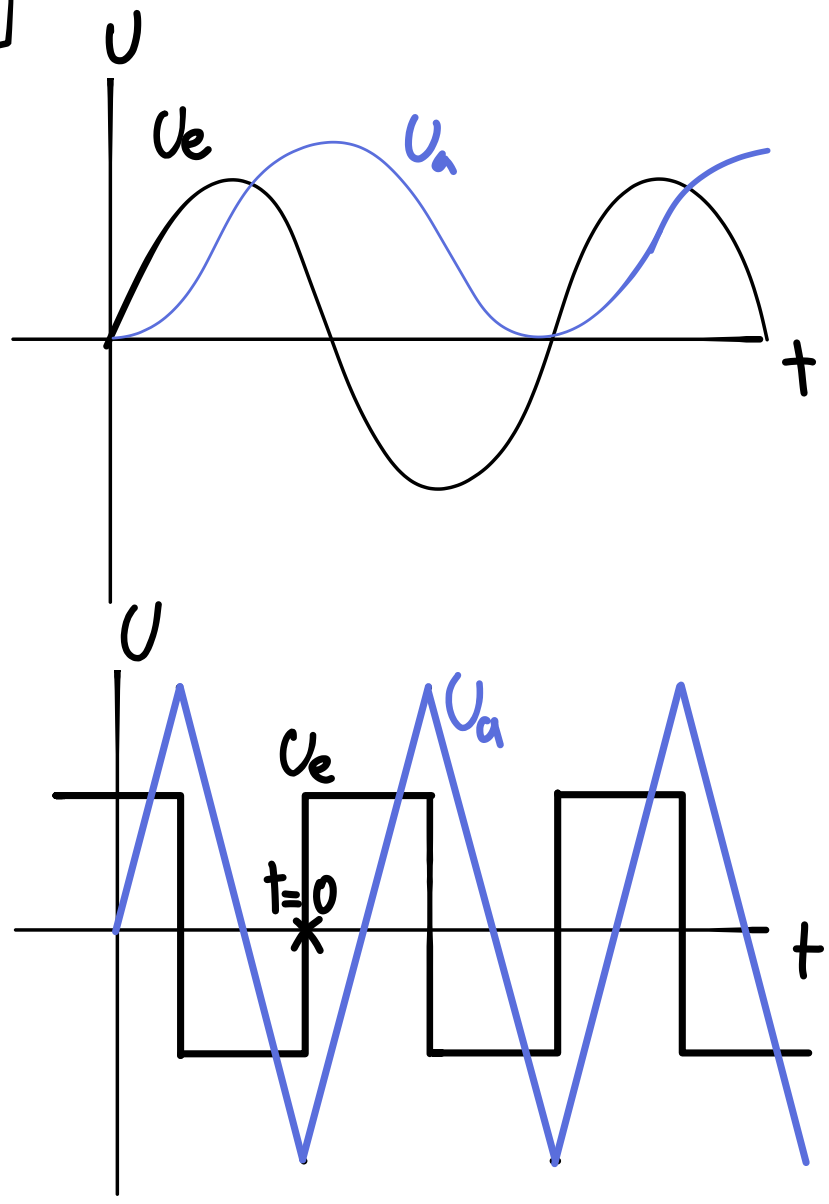
6)



Begründung

$$\int_0^{\pm} \sin(\omega t)\,dt = \frac{-1}{\omega}\cos(\omega t)$$

$$\int_0^t c(t)\,dt = ct$$

$$c = \begin{cases} k & \frac{T}{2} \geq t \bmod(T) \\ -k & \frac{T}{2} < t \bmod(T) \end{cases}$$

$k \in \mathbb{Z}$ $\quad T + t = t$

$$\int_0^t ct\,dt = c\frac{t^2}{2}$$

7)

$$X_C(\omega) = \frac{u(\omega)}{i(\omega)} = \frac{U_0 e^{j\omega t}}{i_0 e^{j\omega t}}$$

$$i(t) = C\frac{du}{dt} = j\omega C U_0 e^{j\omega t}$$

$$\Rightarrow X_C(\omega) = \frac{1}{j\omega C} = \frac{-j}{\omega C}$$

$U_e = U_R$

$I_R = -I_C = \frac{U_e}{R}$

$U_C = X_C \cdot I_C = -\frac{U_e}{\omega RC}$

$V_1 = \frac{U_a}{U_e} = \frac{-1}{\omega RC}$

OpV

$V_2 = -\frac{R_n}{R_1}$

$V = V_1 \cdot V_2 = \frac{R_n}{\omega RC R_1}$