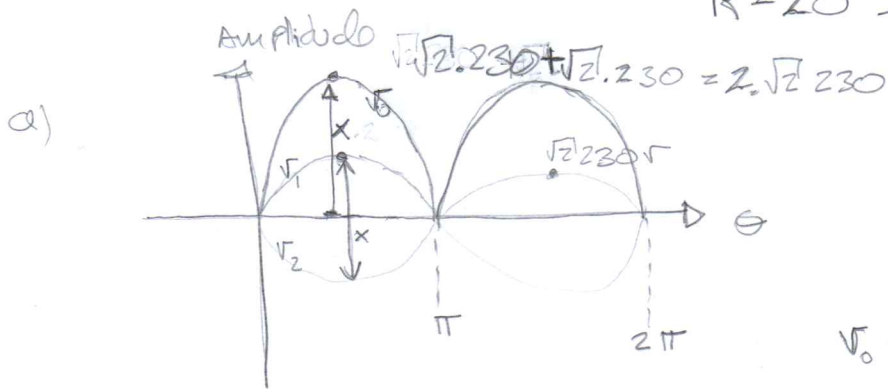


ex 3) PD2

$$V_1 = -V_2 = \sqrt{2} \cdot 230 \sin(100\pi t)$$

$$R = 20 \, \Omega$$

$L \uparrow \uparrow \Rightarrow$ corrente constante na carga.



$$V_0 = V_1 - V_2$$

→ Estrutura do dobro da tensão média da estrutura simples.

$$\begin{aligned} b) \quad V_{\text{médio}} &= \frac{1}{\pi} \int_0^{\pi} V_0(\theta) d\theta \quad ; \quad T = \pi \quad ; \quad V_0(\theta) = 2 \cdot \sqrt{2} \cdot 230 \sin(\theta) \\ &= \frac{1}{\pi} \int_0^{\pi} 2 \sqrt{2} \cdot 230 \sin(\theta) d\theta \\ &= 414,1455 \text{ [V]} \end{aligned}$$

$$\begin{aligned} V_{\text{rms}} &= \sqrt{\frac{1}{\pi} \times \int_0^{\pi} (2 \sqrt{2} \cdot 230 \sin(\theta))^2 d\theta} \quad ; \quad T = \pi \\ &= 460 \text{ [V]} = \sqrt{2} \cdot \sqrt{2} \cdot 230 \end{aligned}$$

c) corrente constante na carga $\Rightarrow I_{\text{rms}} = I_{\text{médio}}$

$$I_{\text{op}} = \frac{2 \cdot \sqrt{2} \cdot 230}{20} = 32,53 \text{ [A]}$$

$$\begin{aligned} I_{\text{médio}} &= \frac{1}{\pi} \int_0^{\pi} I_{\text{op}} \sin(\theta) d\theta \\ &= \frac{1}{\pi} \int_0^{\pi} 32,53 \cdot \sin(\theta) d\theta \approx 20,71 \end{aligned}$$

d)

$$i_{\text{PI-médio}} = \frac{1}{\pi} \int_0^{\pi} i_{\text{PI}}(\theta) d\theta = \frac{1}{2\pi} \int_0^{\pi} 32,53 \sin(\theta) d\theta$$

$$= 10,35 \text{ [A]}$$

$$i_{\text{PI-rms}} = \sqrt{\frac{1}{2\pi} \int_0^{\pi} (32,53 \sin(\theta))^2 d\theta} = 16,265 \text{ [A]}$$

e)

~~$$P = \frac{1}{\pi} \int_0^{\pi} 2 \cdot \sqrt{2} \cdot 230 \cdot \sin(\theta) \cdot 32,53 \cdot \sin(\theta) d\theta$$~~

Does not apply ?

$$P = R I^2 = 20 \cdot 20,71 = U \cdot I = 414,2 \cdot 20,71 \approx 8570$$