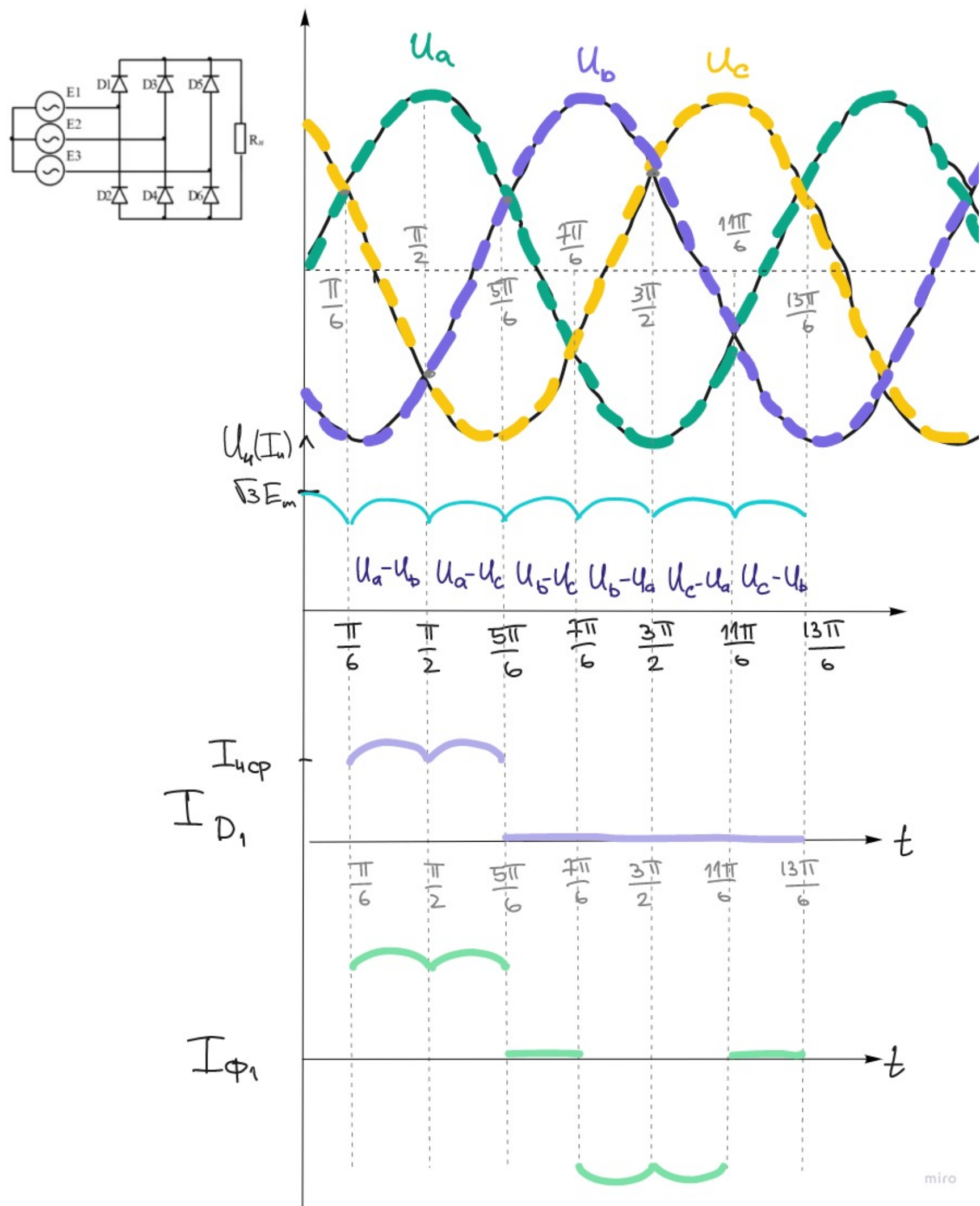




Задача 5 Хаецкая Дарья

Status	ready
checkbox	<input checked="" type="checkbox"/>
class	Electronics
due date	@October 21, 2021



$$U_{H.c.p.} = \frac{1}{T} \int_0^T U(t) dt = \frac{3U_m}{\pi} \int_{\frac{\pi}{6}}^{\frac{\pi}{2}} \sqrt{3} \sin(x + \frac{\pi}{6}) dx =$$

$$= \frac{3\sqrt{3}U_m}{\pi} (-\cos(x + \frac{\pi}{6})) \Big|_{\frac{\pi}{6}}^{\frac{\pi}{2}} = \frac{3\sqrt{3}U_m}{\pi} \approx 1,65 U_m \approx \underset{\parallel E_m}{2,33 U_{rms}}$$

$$U_{\text{ср. D}_m} = \sqrt{3} \cdot E_m = \sqrt{3} U_m$$

$$I_{H.c.p.} = \frac{U_{H.c.p.}}{R_u} = \frac{3\sqrt{3}}{\pi} \cdot \frac{U_m}{R_u}$$

$$I_{H.rms} = \sqrt{\frac{1}{T} \int_0^T i^2(t) dt} = \sqrt{\frac{3}{\pi} \int_0^{\frac{\pi}{3}} I_{H.c.p.}^2 dt} = \sqrt{\frac{3}{\pi} I_{H.c.p.}^2 \cdot \frac{\pi}{3}} = |I_{H.c.p.}|$$

$$I_{D.rms} = \sqrt{\frac{1}{T} \int_0^T i_o^2(t) dt} = \sqrt{\frac{1}{2\pi} \int_0^{\frac{2\pi}{3}} I_{H.c.p.}^2 dt} = \sqrt{I_{H.c.p.}^2 \cdot \frac{2\pi}{3} \cdot \frac{1}{2\pi}} = \frac{I_{H.c.p.}}{\sqrt{3}} \approx 0,577 I_{H.c.p.}$$

$$I_{\Phi.rms} = \sqrt{\frac{1}{\pi} \int_0^{\frac{2\pi}{3}} I_{H.c.p.}^2 dt} = \sqrt{\frac{I_{H.c.p.}^2 \cdot 2}{3}} \approx 0,82 I_{H.c.p.} = 0,82 I_{H.rms}$$