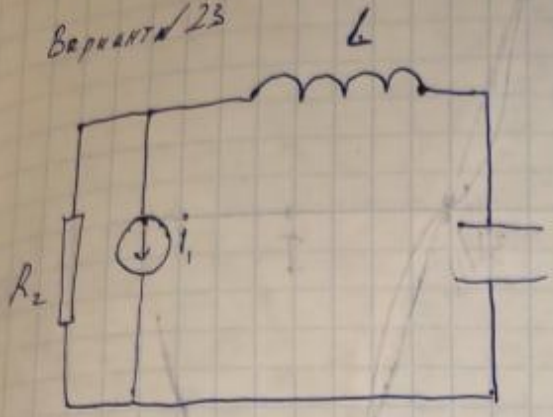
Федоров А. Г. гр. 9351

1.3.5

Вариант 23



$R_2 = 5$ Ом, $L = 5$ Гн, $C = 0{,}1$ Ф

$i_1 = 10\cos(t - 180°)$

$\dot{I}_1 = 10e^{-j\cdot 180°} = -10j$

$\omega = 1$

$Z_{LC} = Z_L + Z_C$

$Z_L = \omega L e^{j90°} = 5e^{j90°} = 5j$

$Z_C = \frac{1}{\omega C} e^{-j90°} = 10e^{-j90°} = -10j$

$Z_{LC} = 5j - 10j = -5j = 5e^{-j\cdot 90°}$

$Z_{вх} = \frac{Z_{LC}\cdot R_2}{Z_{LC} + R_2} = \frac{-25j}{5+5j} = \frac{25e^{-j\cdot 90°}}{5\sqrt{2}e^{-j45°}} = \frac{5}{\sqrt{2}}e^{-j45°}$

$\dot{U}_0 = \dot{I}_1 \cdot Z_{вх}$

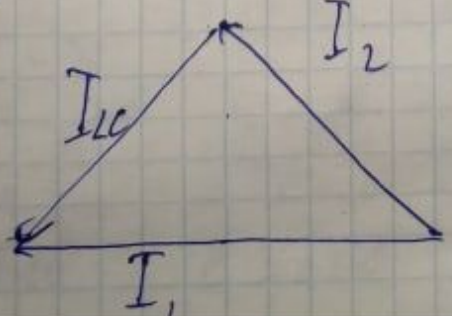
$\dot{U}_2 = \dot{U}_0$

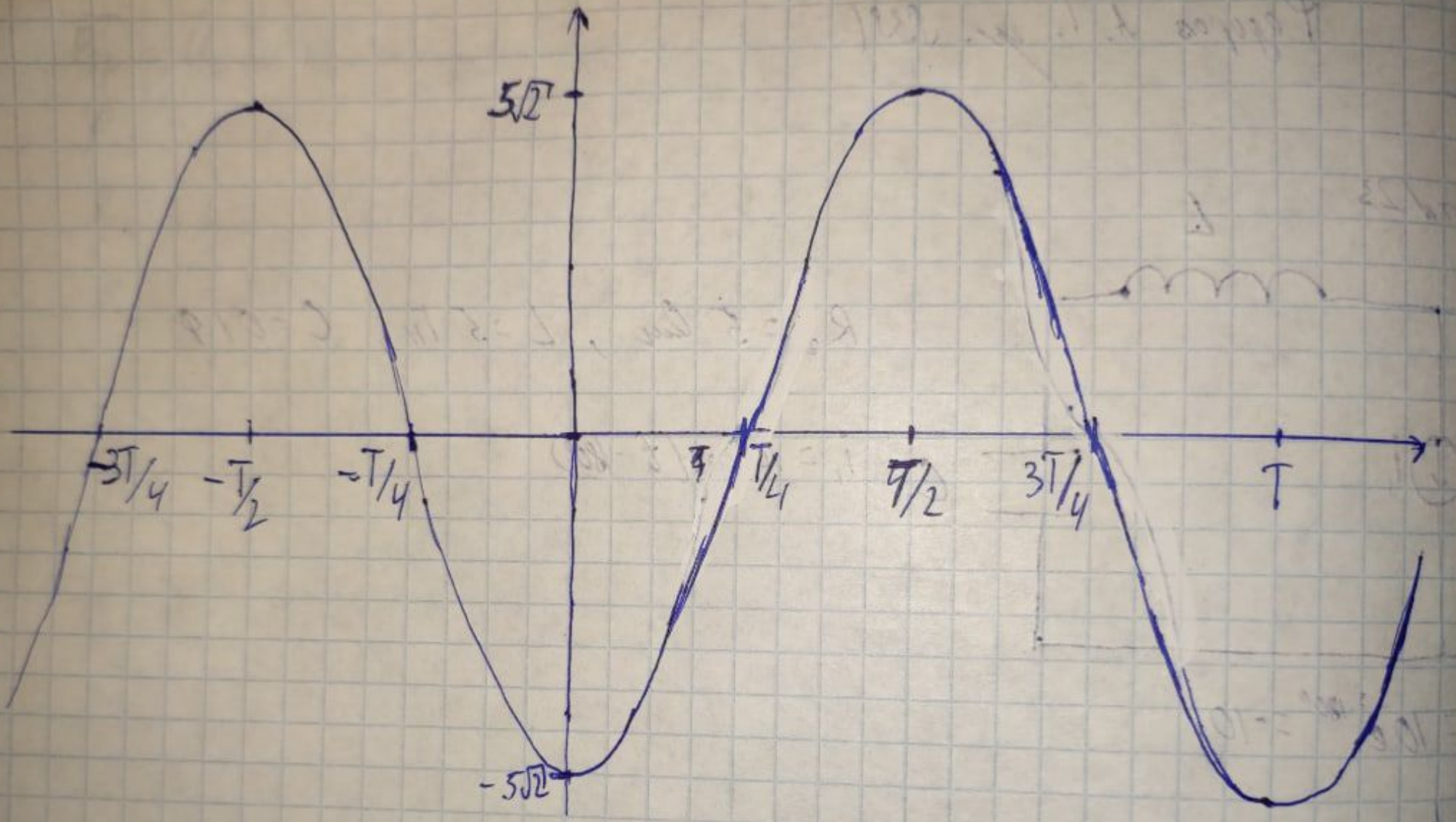
$\dot{I}_2 = \frac{\dot{U}_2}{R_2} = \frac{\dot{I}_1 \cdot Z_{вх}}{R_2} = \frac{10e^{-j\cdot 180°}\cdot \frac{5}{\sqrt{2}}e^{-j45°}}{5} = 5\sqrt{2}e^{-j225°} = 5\sqrt{2}e^{j135°} = -5+5j$

$i_2 = 5\sqrt{2}(t + 135°)$

$\dot{I}_{LC} = \dot{I}_1 - \dot{I}_2 = -10j + 5 - 5j = -5 - 5j = 5\sqrt{2}\cdot e^{-j\cdot 135°}$

ВД




5√2
-5√2
-3T/4
-T/2
-T/4
T/4
T/2
3T/4
T