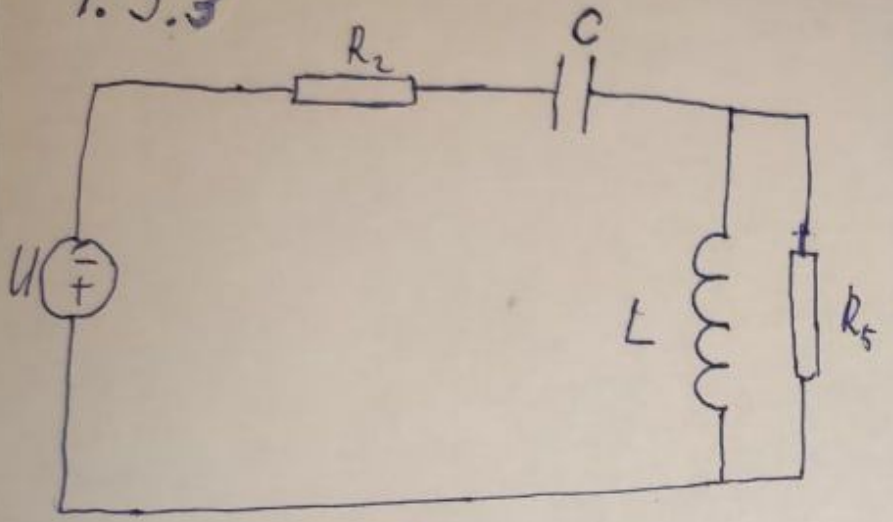
Федоров А.Г. гр. 9391

Вариант №23

1.3.3



$|Z_{вх}|, \varphi, Y_{вх}$

$R_2 = 0,5$ Ом $\quad |Z_C| = 3$

$|Z_L| = 2 \quad R_5 = 2$ Ом

$Z_C = |Z_C| \cdot e^{-j \cdot 90^\circ} = -3i$

$Z_L = |Z_L| e^{j \cdot 90^\circ} = 2i$

$$\frac{1}{Z_{LR_5}} = \frac{1}{Z_L} + \frac{1}{R_5} = \frac{Z_L + R_5}{Z_L \cdot R_5} = \frac{2+2i}{4i} = \frac{2\sqrt{2}\, e^{j45^\circ}}{4 e^{j90^\circ}} = \frac{\sqrt{2}}{2} e^{-j45^\circ}$$

$$Z_{вх} = R_2 + Z_C + Z_{LR_5} = 0,5 + -3i + 1 + 1i = 1,5 - 2i = 2,5\, e^{-j \arccos \frac{3}{5}}$$

$$Y_{вх} = \frac{1}{Z_{вх}} = 0,4\, e^{j \cdot \arccos \frac{3}{5}}$$

$$\varphi = -\arccos \frac{3}{5}$$