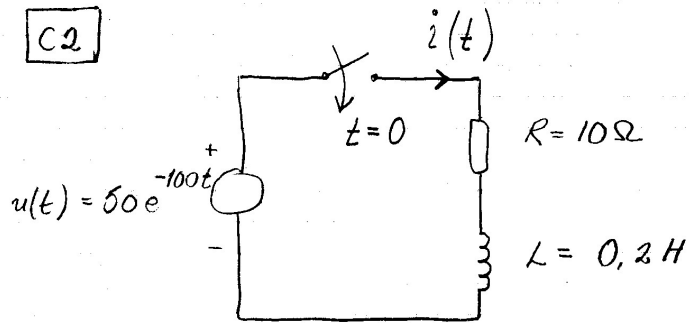
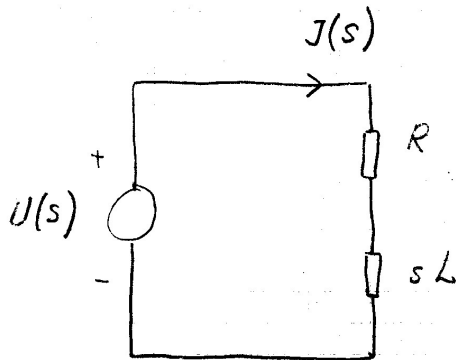


C2



OPERATORSCHEMA :



$$J(s) = \frac{U(s)}{R + sL} \quad \left. \vphantom{J(s)} \right\} \rightarrow$$

LAPLACE -
PARLÖREN $\Rightarrow U(s) = 50 \cdot \frac{1}{s+100}$

$$J(s) = \frac{\frac{50}{s+100}}{10 + 0,2s} = \frac{\overset{250}{\frac{50}{0,2}}}{s+100} \cdot \frac{1}{s+50} =$$

$$= \frac{A}{s+100} + \frac{B}{s+50}$$

$A = -5$
 $B = 5$ \rightarrow *)

$$i(t) = -5 \cdot e^{-100t} + 5 \cdot e^{-50t}$$

*) IDENTIFIERING AV A OCH B

$$\frac{250}{(s+100)(s+50)} = \frac{A(s+50) + B(s+100)}{(s+100)(s+50)} =$$

$$= \frac{(A+B)s + 50A + 100B}{(s+100)(s+50)}$$

$$\left. \begin{array}{l} s^1 : A + B = 0 \Rightarrow A = -B \\ s^0 : 50A + 100B = 250 \end{array} \right\} \Rightarrow$$

$$-50B + 100B = 250 \Rightarrow B = 5$$

$$\Rightarrow A = -5$$

Alternativt, strunta i partialbråksuppdelningen och utveckla istället nämnaren med hjälp av kvadratkomplettering.

$$J(s) = \frac{250}{(s+100)(s+50)} =$$

$$= \frac{250}{s^2 + 50s + 100s + 5000} =$$

$$= \frac{250}{s^2 + 150s + 75^2 - 75^2 + 5000} =$$

$$= \frac{250}{(s+75)^2 - 25^2}$$

$$\rightsquigarrow i(t) = 10e^{-75t} \sinh(25t) \text{ A}$$