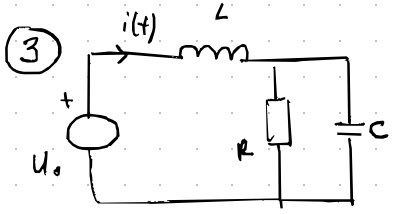
④ Prebaci u gornje područje (og) $\frac{2}{(s+1)^2+4}$

$\frac{2}{(s+1)^2+2^2}$ $\quad \sin(\omega t) \circ\!\!-\!\!\bullet \frac{\omega}{s^2+\omega^2}$

↳ sinus, ali $F(s+a) \Rightarrow$ prigušenje

$e^{-t} f(t) = e^{-t} \cdot \sin 2t \cdot \underbrace{S(t)}_{\text{step}}$

③



$U_0 = \frac{2}{s}$ $\quad R = L = C$ $\quad U_R = R \cdot i(t)$

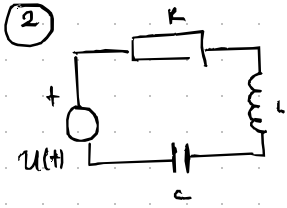
$i_L(0) = u_c(0) = 0$

Zaplaniramo otpori: R, Ls, $\frac{1}{Cs}$

$\Rightarrow Z(s) = Ls + \left(\frac{1}{R} + Cs\right)^{-1} = s + (1+s)^{-1} = s + \frac{1}{1+s}$

$U_0(s) = \frac{2}{s} \longrightarrow I(s) = \frac{U(s)}{Z(s)} = \frac{\frac{2}{s}}{s + \frac{1}{1+s}} = \boxed{\frac{2(s+1)}{s(s^2+s+1)}}$

②



$R = L = C = 1$

$u(t) = S(t)$

$e(t) = L \cdot \frac{di(t)}{dt} + R \cdot i(t) + \frac{1}{C} \int_0^t i(t)dt = u(t)$

Laplace $\qquad u(t) = S(t) \circ\!\!-\!\!\bullet$

$e_R(t) = R \cdot i(t) \circ\!\!-\!\!\bullet (R)\, I(s)$

$e_L(t) = L \cdot i'(t) \circ\!\!-\!\!\bullet L \cdot (s \cdot I(s) - I(0)) = (Ls) I(s) - LI(0)$

$e_C(t) = \frac{1}{C} \int_0^t i(t)dt \circ\!\!-\!\!\bullet \frac{1}{C} \frac{I(s)}{s} = \left(\frac{1}{C} \cdot \frac{1}{s}\right) I(s)$

$Z = R + Ls + \frac{1}{Cs}$

$Z = 1 + s + \frac{1}{s}$

$Z = \frac{s + s^2 + 1}{s}$

$I(s) = \frac{E(s)}{Z(s)} = \frac{\frac{1}{s}}{\frac{s+s^2+1}{s}} = \frac{1}{s+s^2+1}$