HOMEWORK #2 hints

1. $i_L(0^-) = i_g$ and $v_L(0^+) = 0$ V

2. $0 < \mathrm{L} < 100$ mH

3. a) $\dfrac{dv_1}{dt} = \dfrac{i_C}{C} = \dfrac{i_1 + i_2 + (v_o - v_1)/R_1}{C}$

   b) $v_1(0^-) = v_g = -\mathrm{v_o}$

4. a) critically damped

   b) $i(t) = A_1 e^{-\alpha t} + A_2 t e^{-\alpha t} + A_3$ where $\alpha = \dfrac{100 \text{ kr/s}}{6}$

   $$\left.\frac{di(t)}{dt}\right|_{t=0^+} = \frac{v_L(0^+)}{L} = \frac{6 \text{ V}}{3\ \mu\text{H}} = 2 \text{ MA/s} = -\alpha A_1 + A_2$$