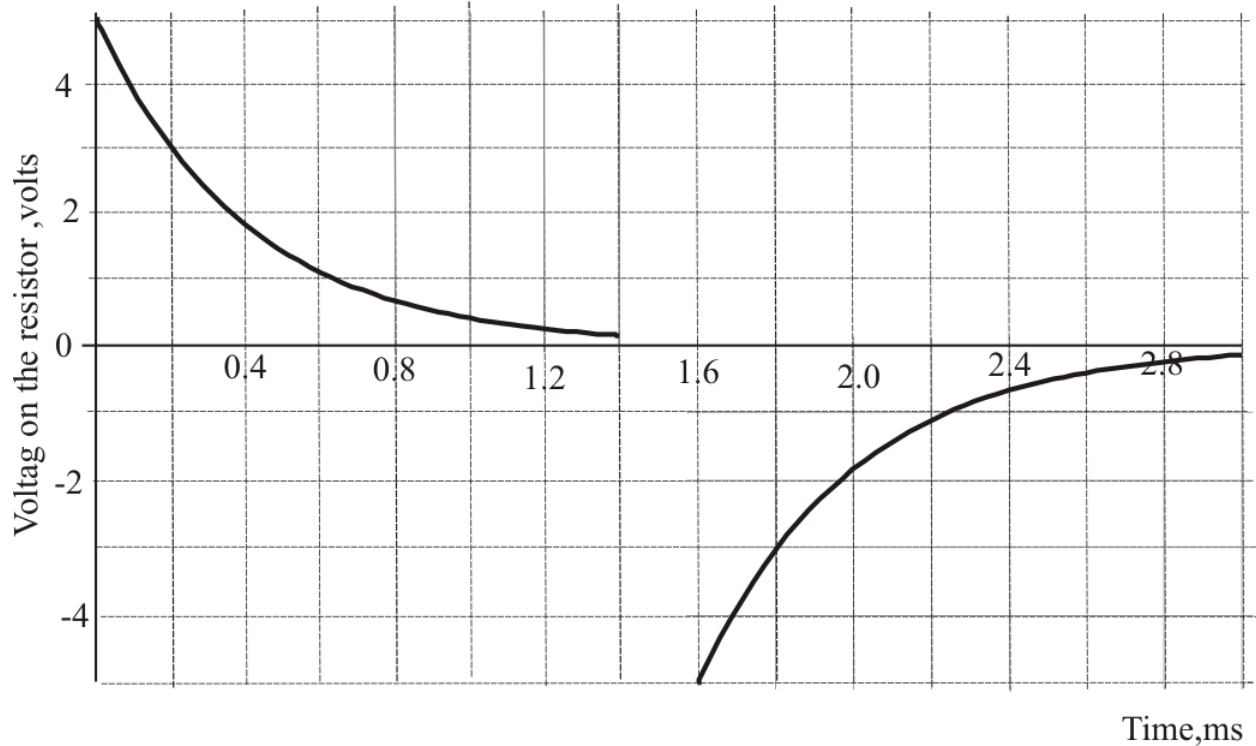


Physics 112
Exp.#7: Capacitors and Inductors
Preliminary Laboratory Questions

- 1) For the RC circuit, explain what happens for charging and discharging the capacitors when $\tau \rightarrow 0$ and when $\tau \rightarrow \infty$.
- 2) If unknown capacitor is connected in series with a resistor $R = 2 \text{ K}\Omega$, and the voltage across the resistor was measured as given in the figure below:



Then find

- a. The time constant of the circuit.
- b. The value of the capacitor.
- c. The peak-voltage of the input square signal.
- 3) Calculate the time constant τ for RL circuit if $R = 1 \text{ k}\Omega$ and $L = 10 \text{ mH}$.
- 4) Calculate the natural frequency of an LC circuit with $L = 10 \text{ mH}$ and $C = 0.1 \mu\text{F}$
- 5) What will happen when the frequency of the driving voltage in LC circuit equals its natural frequency? Explain in detail.