**P1** Design a parallel RLC circuit with $R = 2 \, \text{k}\Omega$ that has the characteristic function
\[ s^2 + 100s + 10^6 = 0 \]
Hint: see readings to see how the characteristic function maps to $\alpha$ and $\omega_0$.

**P2** Find $C$ in the circuit below so that the response is underdamped with a unity damping factor ($\alpha = 1$)

![Circuit Diagram](image)

**P3** Find $i(t)$ in the circuit below if the capacitor is initially discharged.

![Circuit Diagram](image)