Consider a series RLC circuit shown in fig.1, where
C= 0.01 µF and L=10 mH.
We display the voltage across the capacitor on the
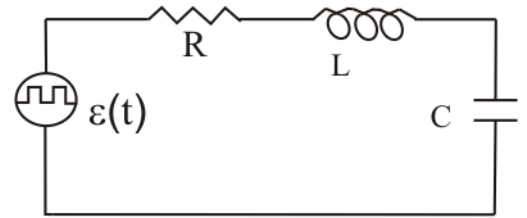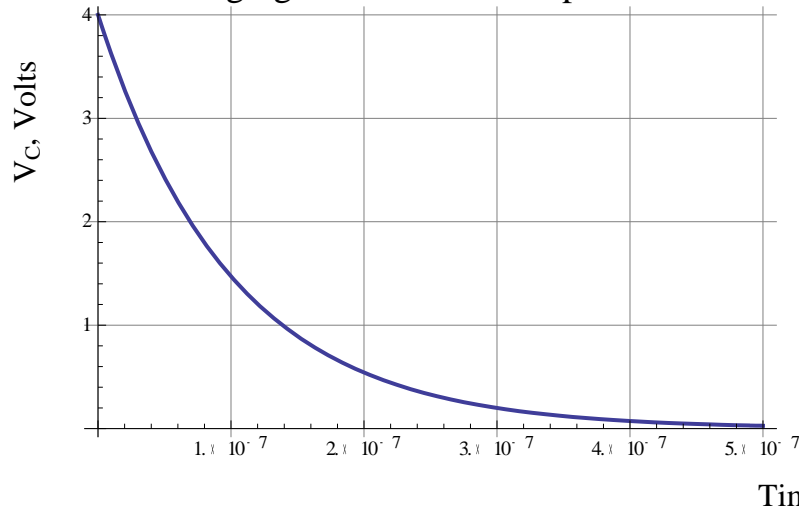screen of the DSO and change the value of R.
A) Find the critical value for R and right down the
range of values for overdamping and underdamping
cases.

fig.1

B) For a certain value of R more than the critical value, the voltage across the
capacitor while it is discharging looks like the shape shown in the figure below:

Time, seconds

Estimate the value of the decay constant from this plot.
C) If we decrease the value of R and it become less than the critical one, and the
shape of V_C was as shown below:

Time, seconds
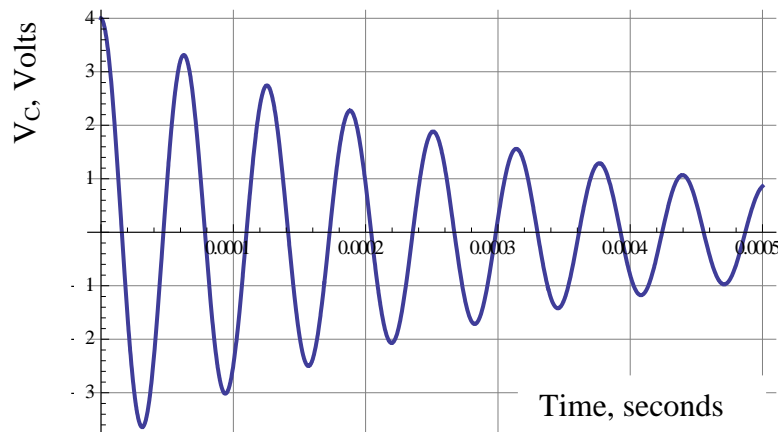
From this plot estimate:
1. The decay constant for this case
2. The value of R.
3. The frequency of the oscillation.