

96. We write (as functions of time) $V_L(t) = \mathcal{E}e^{-t/\tau_L}$. Considering the first two data points, (V_{L1}, t_1) and (V_{L2}, t_2) , satisfying $V_{Li} = \mathcal{E}e^{-t_i/\tau_L}$ ($i = 1, 2$), we have $V_{L1}/V_{L2} = \mathcal{E}e^{-(t_1-t_2)/\tau_L}$, which gives

$$\tau_L = \frac{t_1 - t_2}{\ln(V_2/V_1)} = \frac{1.0 \text{ ms} - 2.0 \text{ ms}}{\ln(13.8/18.2)} = 3.6 \text{ ms} .$$

Therefore, $\mathcal{E} = V_{L1}e^{t_1/\tau_L} = (18.2 \text{ V})e^{1.0 \text{ ms}/3.6 \text{ ms}} = 24 \text{ V}$. One can easily check that the values of τ_L and \mathcal{E} are consistent with the rest of the data points.