

44. (a) We use $q = q_0 e^{-t/\tau}$, or $t = \tau \ln(q_0/q)$, where $\tau = RC$ is the capacitive time constant. Thus,
 $t_{1/3} = \tau \ln[q_0/(2q_0/3)] = \tau \ln(3/2) = 0.41\tau$.
- (b) $t_{2/3} = \tau \ln[q_0/(q_0/3)] = \tau \ln 3 = 1.1\tau$.