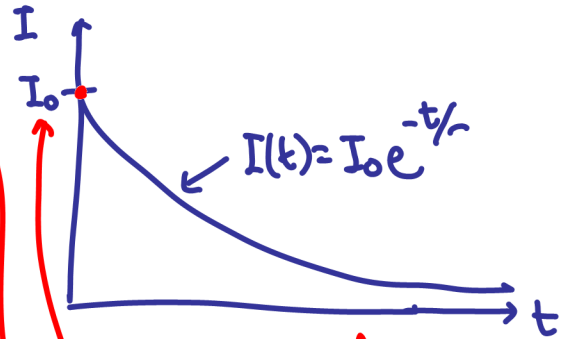
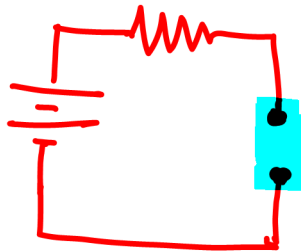


When the capacitor is fully charged, voltage across the capacitor is the same as the battery

$I(t) = ?$   $I = \frac{dQ}{dt}$

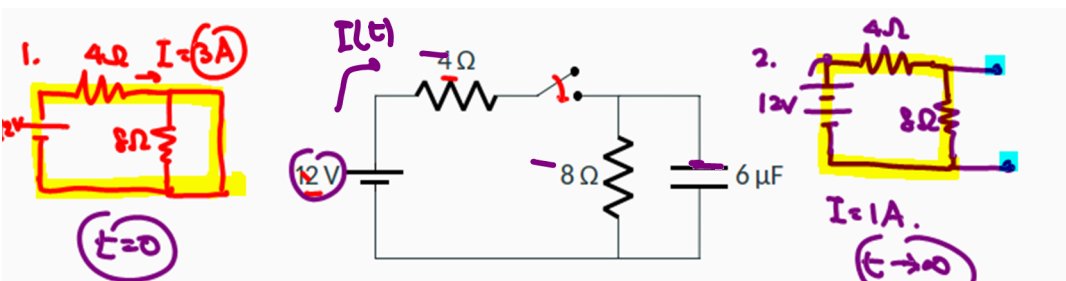


A fully charged capacitor acts like an open circuit:



$I_0 = \frac{V}{R}$  ← as if the capacitor wasn't there

An uncharged capacitor acts like a short circuit:



**Example:** The capacitor in the circuit is initially uncharged. Find the current through the battery

- Immediately after the switch is closed  $\rightarrow t=0 \rightarrow Q_c=0, V_c=0 \rightarrow$  acts like a short
- A long time after the switch is closed  $\rightarrow t \rightarrow \infty \rightarrow Q = \dots, I_c=0 \rightarrow$  acts like an open

