

Capacitors

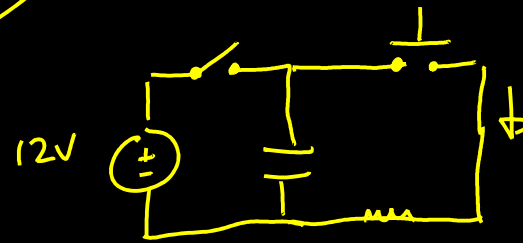
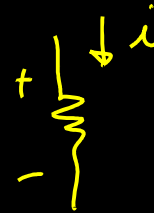
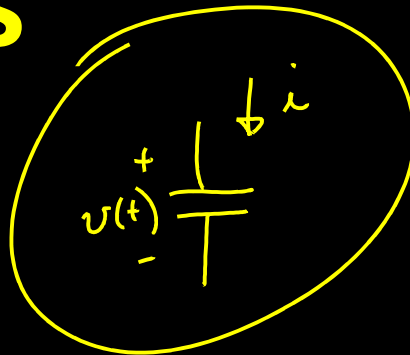
- Math $v \rightarrow i$ $i \rightarrow v$
- Power, energy, charge
- DC Steady State

Capacitors

- Math

$$i(t) = C \frac{dv}{dt}$$

braincells

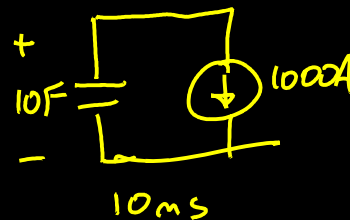
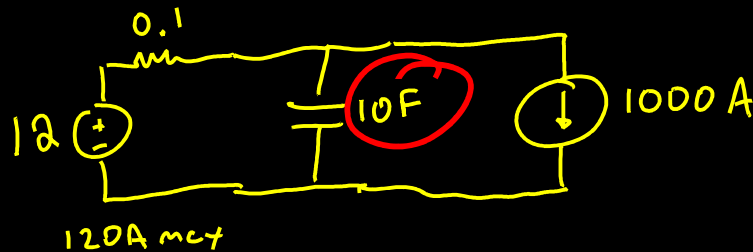


$$i = C \frac{dv}{dt}$$

$$i = C \infty ? !$$

$$i(t) = C \frac{dv}{dt}$$

$$v = \frac{1}{C} \int_0^t i(\tau) d\tau + v(0)$$



$$v(t) = \frac{1}{C} \int_0^t i(\tau) d\tau + v(0)$$

$$= \frac{1}{10} \int_0^t (-1000) d\tau + 12$$

$$= -\frac{1000}{10} (\tau) \Big|_0^t + 12 = -100 + 12$$

$$= 12 - 100 + v(10\text{ms}) = 12 - 0.01 \cdot 100 = 11\text{V}$$