

$$C = \frac{Q}{U}$$

$$R = \frac{U}{i}$$

$$i = \frac{U}{R} = \frac{Q}{RC}$$

$$i = - \frac{dQ}{dt}$$

$$\frac{Q}{RC} = - \frac{dQ}{dt}$$

$$\frac{dQ}{Q} = - \frac{1}{RC} dt$$

$$\ln Q = - \frac{t}{RC} + C$$

$$A = e^C$$

$$Q = A e^{-\frac{t}{RC}}$$

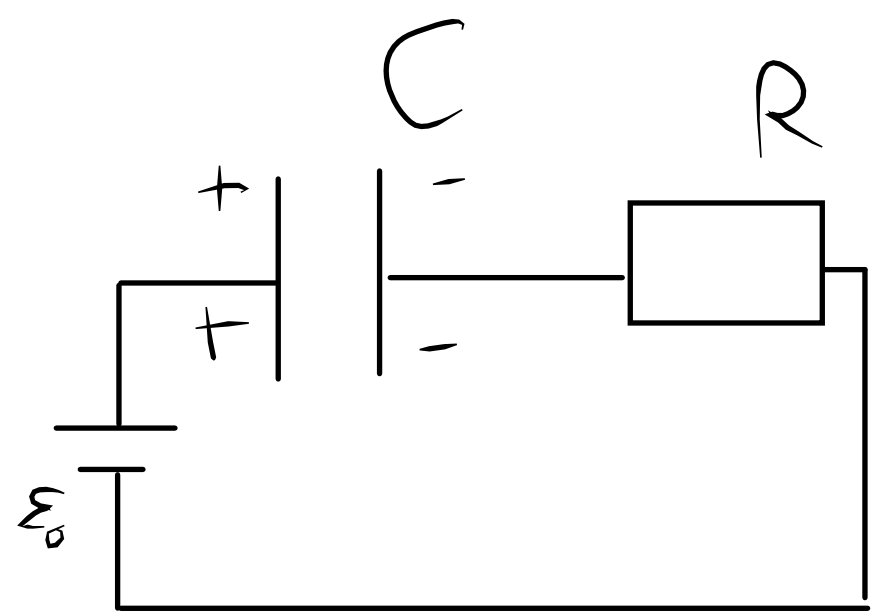
$$Q(0) = Q_0 = C U_0$$

$$Q = C U_0 e^{-\frac{t}{RC}}$$

$$i = - \frac{dQ}{dt} = \frac{U_0}{R} e^{-\frac{t}{RC}}$$

$$dW = R i^2 dt \quad W = R \frac{U_0^2}{R^2} \int_0^{\infty} e^{-\frac{2t}{RC}} dt =$$

$$= \frac{1}{2} \frac{U_0^2}{R} (-RC) \cdot (-1) = \frac{1}{2} U_0^2 C$$



$$E_0 - iR - \frac{Q}{C} = 0$$

$$i = \frac{dQ}{dt}$$

$$E_0 - \frac{dQ}{dt} R - \frac{Q}{C} = 0$$

$$-R \frac{dQ}{dt} = \frac{Q}{C} - E_0$$

$$\frac{-dQ}{Q - E_0 C} = \frac{1}{RC} dt$$

$$-\ln |Q - E_0 C| = \frac{1}{RC} t + A_1$$

$$Q - E_0 C = A e^{\frac{t}{RC}}$$

$$Q(0) = 0$$

$$Q = E_0 C (1 - e^{-\frac{t}{RC}})$$

$$A = -E_0 C$$

$$i = \frac{E_0}{R} e^{-\frac{t}{RC}}$$

$$W_{Er} = \int_0^{\infty} E_0 i dt = \int_0^{\infty} \frac{E_0^2}{R} e^{-\frac{2t}{RC}} dt = \frac{E_0^2 C}{2}$$

$$W_R = \int_0^{\infty} i^2 R dt = R \int_0^{\infty} \frac{E_0^2}{R^2} e^{-\frac{2t}{RC}} dt = \frac{E_0^2 C}{2}$$