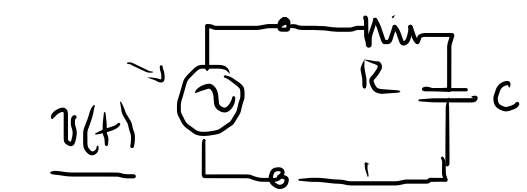
R, L, C

$i(t) = C \frac{dv(t)}{dt}$ ... $v(t) = L \frac{di(t)}{dt}$

$\int$ ↖ ↗



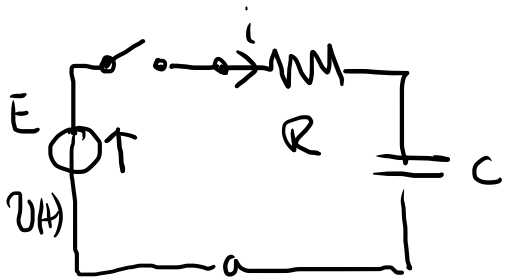
~ e ...

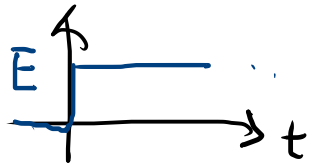
$$f(t) \rightarrow F(s) = \int_0^{\infty} f(t) e^{-st} dt \qquad s = \sigma + j\omega$$

[V(s)] ←...

- $5 \cdot v(t) \xrightarrow{\mathcal{L}} 5 \cdot V(s)$
- $\frac{dv(t)}{dt} \xrightarrow{\mathcal{L}} s \cdot V(s) \left(- f(0) \right)$

$\int \cdot \rightarrow \frac{F(s)}{s}$





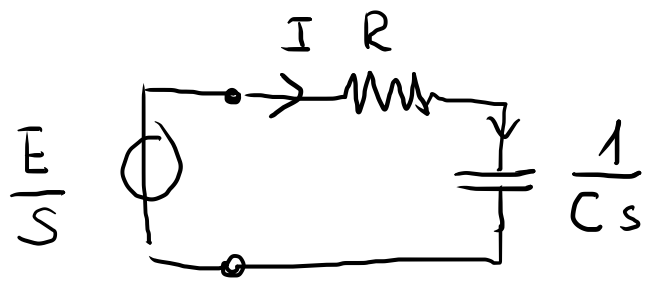
$$E = i(t)\,R + \frac{1}{C}\int i(t)\,dt$$

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

$\mathcal{L}$

$$V(s) = \frac{E}{S} \qquad R$$

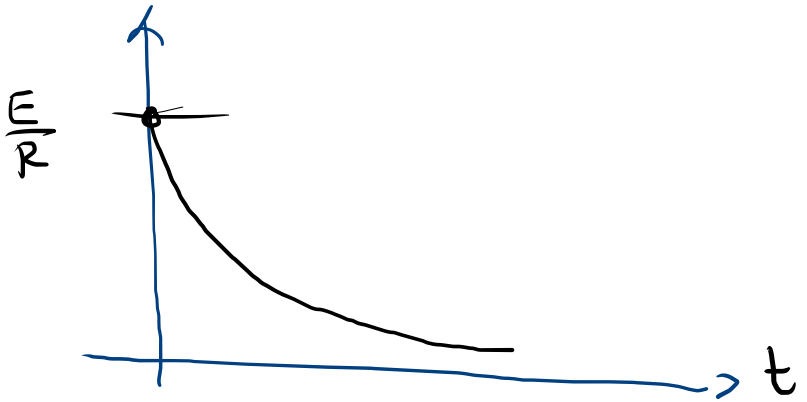
$$V_c = \frac{1}{C}\cdot\frac{I(s)}{S}$$



$$\frac{E}{S} = R\cdot I(s) + I_s\cdot\frac{1}{sC} = I(s)\left(R + \frac{1}{sC}\right)$$

$$I(s) = \frac{E}{S}\,\frac{1}{\left(R + \frac{1}{sC}\right)} = E\,\frac{\cdot\,1}{\frac{R}{R}\left(SR + \frac{1}{C}\right)} = \left(\frac{E}{R}\right)\frac{1}{S + \underbrace{\frac{1}{RC}}_{a}}$$

$$\rightleftharpoons i(t) = \frac{E}{R}\,e^{-\frac{1}{RC}t}$$


E/R
t