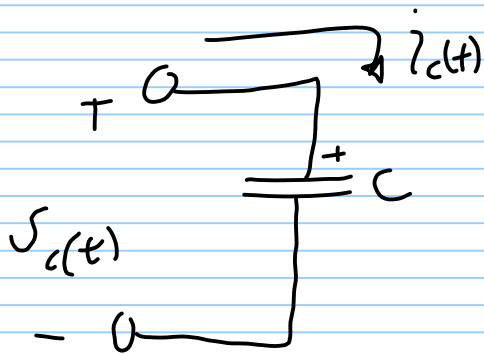


ch7

Response of first-order RL & RC circuits



$$i_c(t) = C \frac{d}{dt} V_c(t)$$

$$V_c(t) = \frac{1}{C} \int_0^t i_c(t) dt + \underline{V_c(0^-)}, \text{ for } t > 0$$

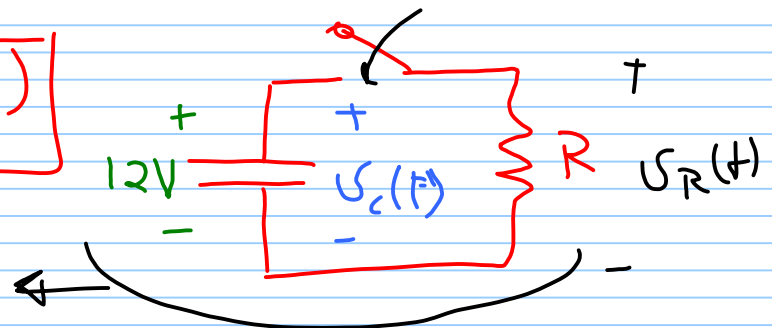
initial voltage
of the capacitor

at $t = 0^+$

$$V_c(0^+) = \frac{1}{C} \int_{0^-}^{0^+} i_c(t) dt + V_c(0^-)$$

$$V_c(0^+) = V_c(0^-)$$

at $t = 0$



$$V_c(0^-) = 12V$$

$$V_c(0^+) = 12V$$

$$V_c(\infty) = \text{zero}$$

$$V_R(0^-) = \text{zero}$$

$$V_R(0^+) = 12V$$

→ 0.0000001

