

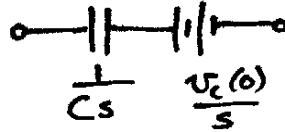
s-Domain Circuit Elements

* Summary:

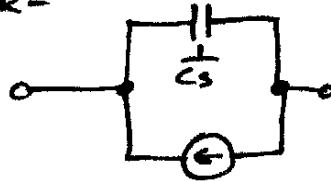
RESISTOR



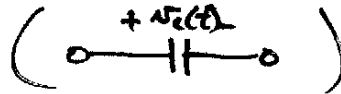
CAPACITOR



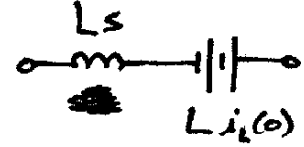
-OR-



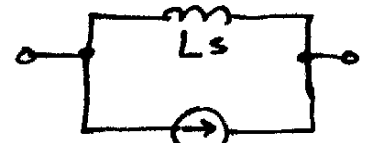
$C v_c(0)$



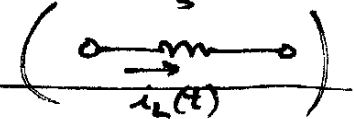
INDUCTOR



-OR-

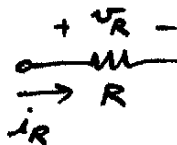


$\frac{i_L(0)}{s}$



* Why it works:

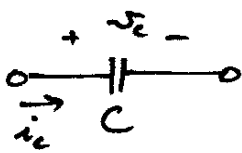
Resistor



(Laplace transform)

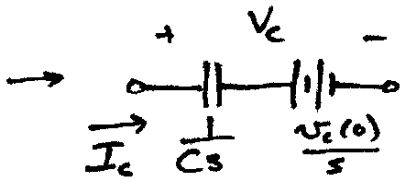
$v_R = R i_R \xleftrightarrow{\text{L.T.}} V_R = R I_R$

Capacitor

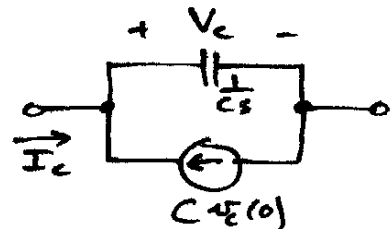


$v_c = \frac{1}{C} \int_0^t i_c(x) dx + v_c(0) \xleftrightarrow{\text{L.T.}} V_c = \frac{1}{C} \frac{I_c}{s} + \frac{v_c(0)}{s}$

$i_c = C \frac{dv_c}{dt} \xleftrightarrow{\text{L.T.}} I_c = C(s V_c - v_c(0))$



-OR-



Inductor

similar analysis as capacitor.

