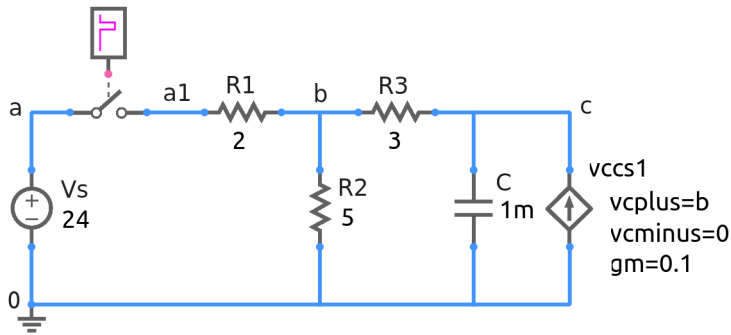


# ee101\_rc4.sqproj



In the  $RC$  circuit shown in the figure, the switch has been closed for a long time and is opened at  $t = 0$ .

## Exercise Set

1. Find the initial value (at  $t = 0^-$ ) of the capacitor voltage ( $V_c$  in the figure).
2. Draw the circuit for  $t > 0$ . Find the Thevenin resistance as seen by the capacitor and calculate the time constant  $\tau = R_{Th} C$ .
3. Obtain an expression for the capacitor voltage for  $t > 0$  sec. Use the condition that  $V_C(0^+) = V_C(0^-)$ .
4. Using  $V_C(t)$ , obtain expressions for  $i_C(t)$  and  $i_{R2}(t)$ .
5. Plot  $V_C(t)$ ,  $i_C(t)$ , and  $i_{R2}(t)$  for  $-0.02 \text{ sec} < t < 0.1 \text{ sec}$ .
6. Compare your plots with simulation results.