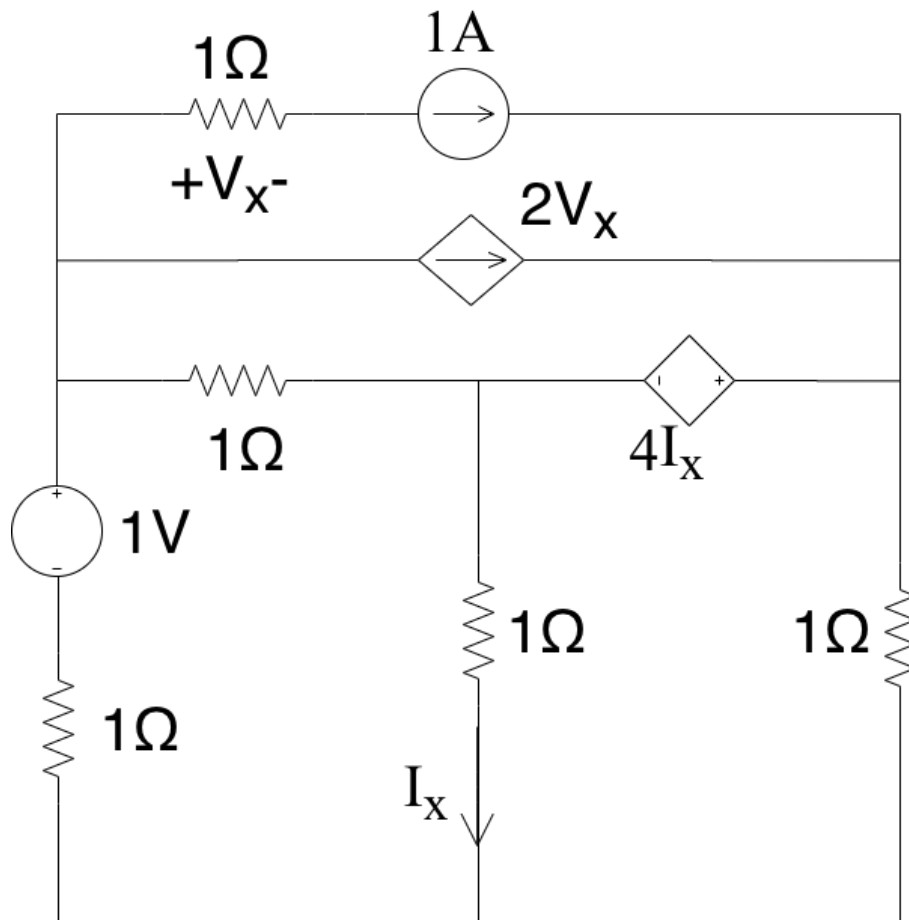
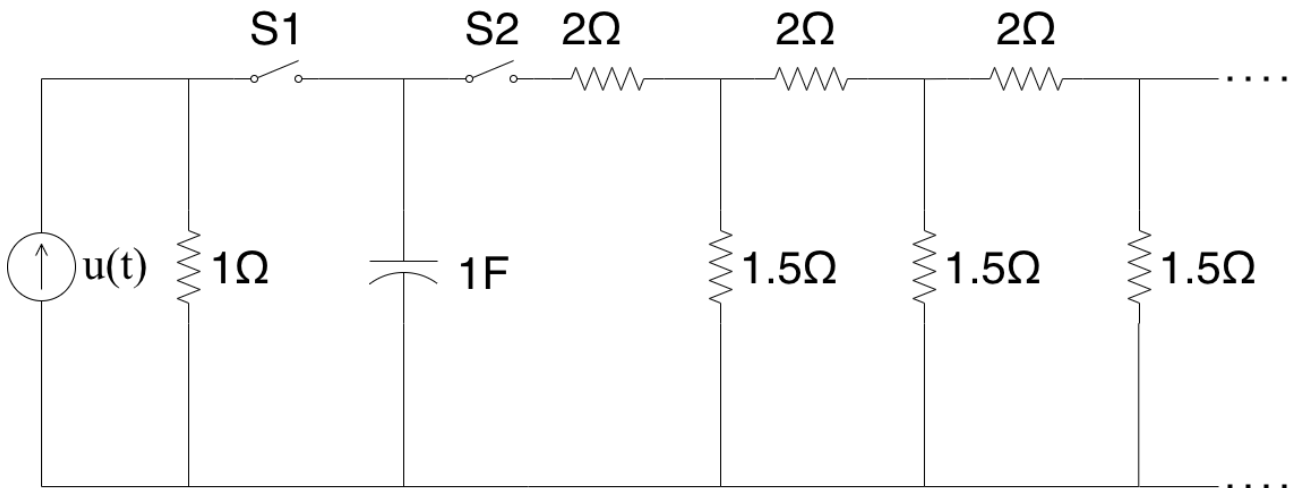


1) Using the **node** analysis, calculate the voltage of all nodes. **(2.0)**



2) In the following circuit, both switches are open and the initial voltage of capacitor is $V_C(0) = 0V$. At $t = 0$ the switch S1 is closed and the switch S2 is open. At $t = 1s$, the S1 is opened and S2 is closed.

- a) Obtain the voltage of capacitor $V_C(t)$ at $t=1s$. (0.75)
- b) Obtain the voltage of capacitor $V_C(t)$ at $t=4s$. (0.5)
- c) Draw the waveform of $V_C(t)$ approximately. (0.25)



3) In the following circuit, the op-amp is ideal and the initial conditions are zero. Obtain the relation between V_o and V_s . (1.5)

