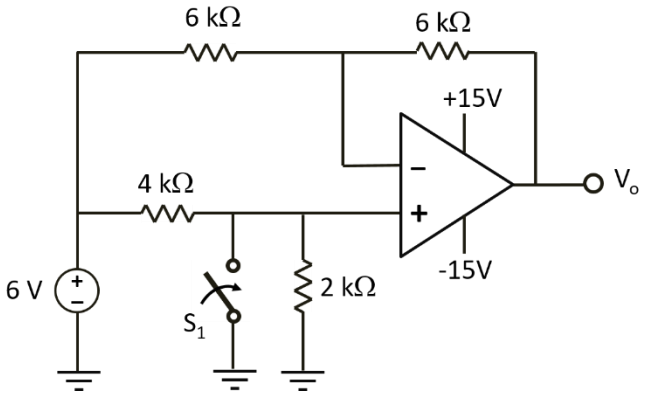
The Hong Kong University of Science and Technology
Department of Electronic and Computer Engineering

ELEC2400 **ELECTRONIC CIRCUITS** FALL 2021-22

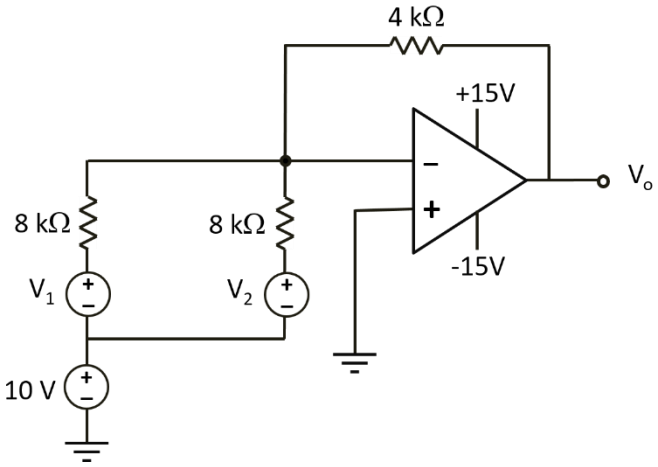
HOMEWORK 3

Issued on Nov. 7, 2021 (Sunday)
Due date: Nov. 16, 2021 (Tuesday), 11:59pm
[Please submit your homework online https://canvas.ust.hk]

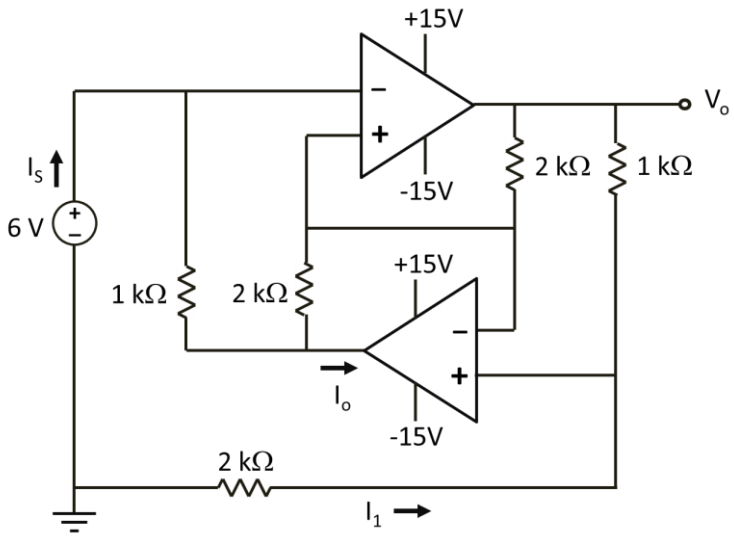
Q1. Assuming ideal op amp, find the voltage V_o, (a) when the switch, S_1, is open, and (b) when S_1 is closed.



Q2. Assuming ideal op amp,
(a) Find the expression for V_o as a function of V_1 and V_2.
(b) Find V_o when V_1 = 4 V, V_2 = 4 V.
(c) Find V_o when V_1 = 4 V, V_2 = 8 V.



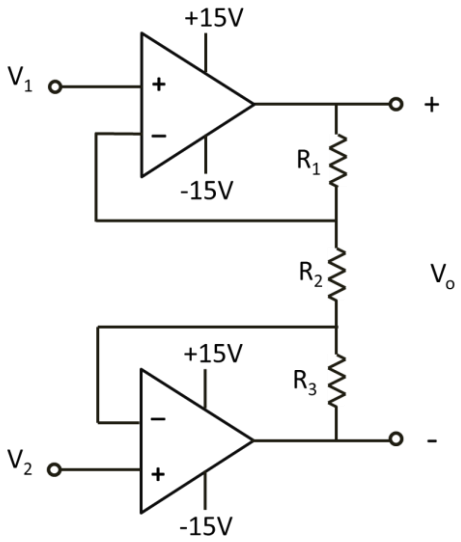
Q3. Find I_1, I_S, I_o and V_o assuming ideal op amps.



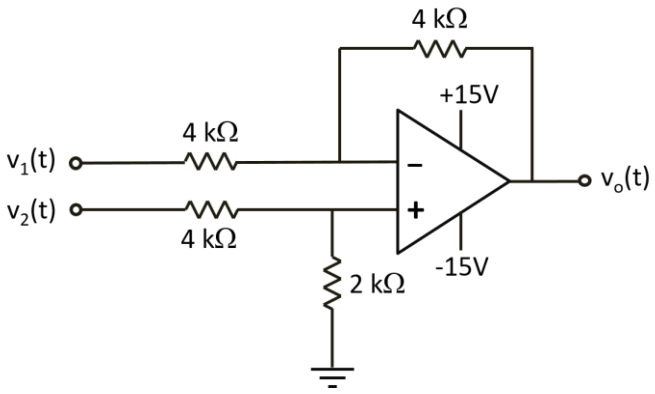
Q4. Assuming ideal op amps,

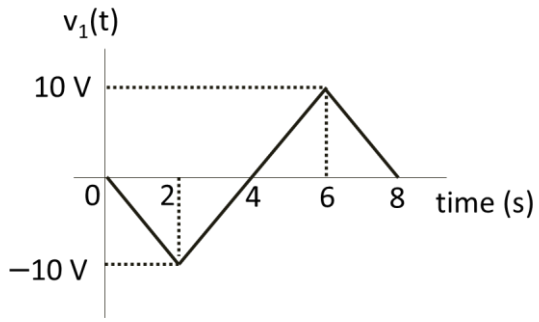
(a) Find the expression for V_o as a function of V_1 and V_2.

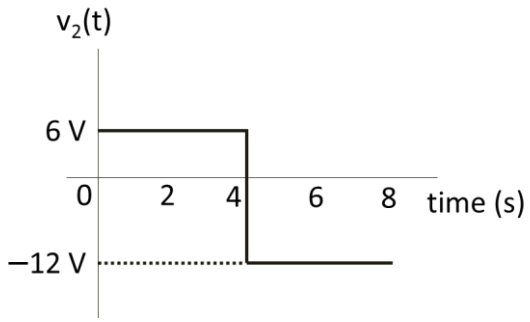
(b) Find V_o when V_1 = 3 V, V_2 = 4 V, $R_1 = R_2 = R_3$ = 1 kΩ.



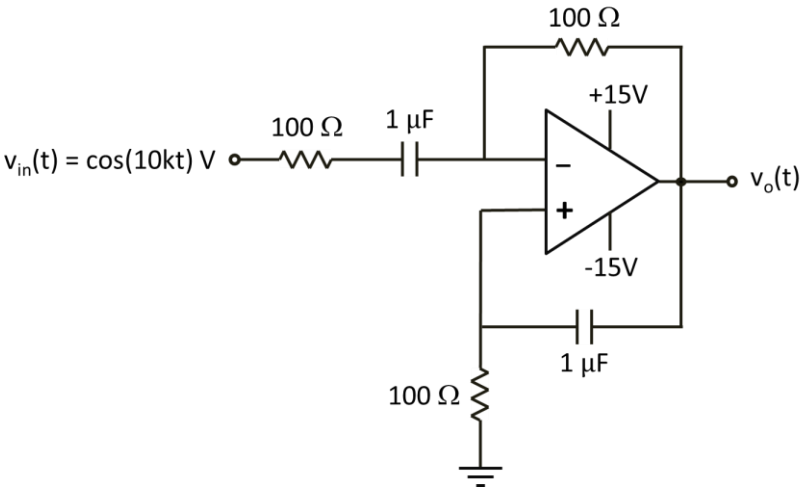
Q5. Plot the waveform of $v_o(t)$ assuming ideal op amp.







Q6. Assuming ideal op amp, find $v_o(t)$.



Q7. Assuming ideal op amp, find $v_{in}(t)$.