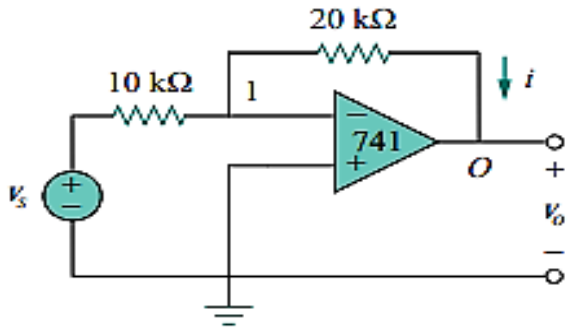
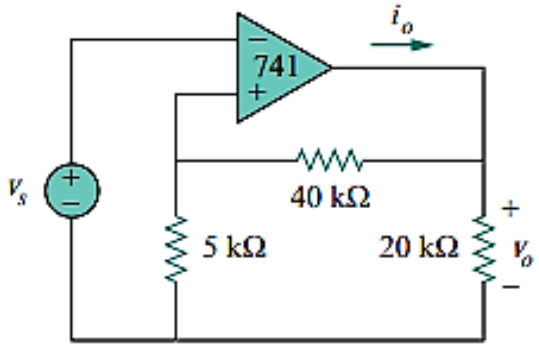
Electronic Circuits
Op- Amp
Sheet 1

1. For the circuit shown, A 741 op amp has an open-loop voltage gain of 2×10^5, input resistance of 2 MΩ, and output resistance of 50Ω. Find the closed-loop gain Vo/Vs. Determine current i when Vs = 2 V.

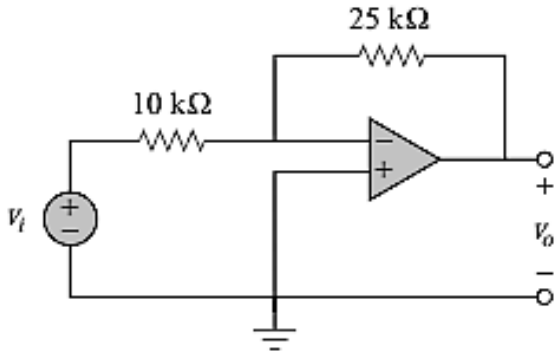


2. If the same 741 op amp in problem1 is used in the following circuit, calculate the closed-loop gain Vo/Vs. Find io when Vs = 1 V.

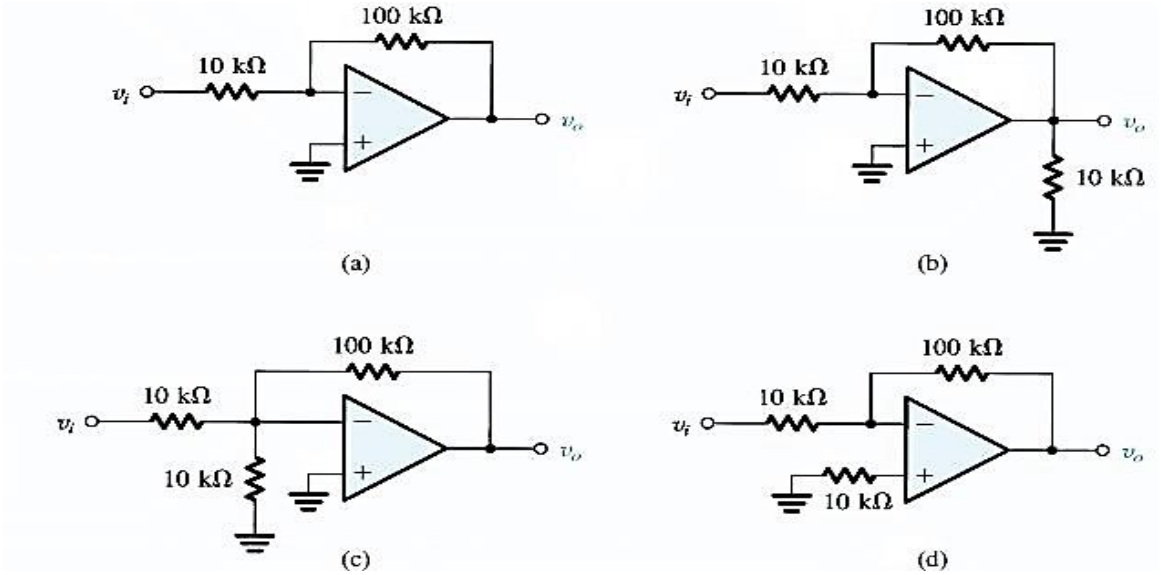


3. Assume an Ideal Op-Amp for problem 2, calculate the closed-loop gain Vo/Vs. Find io when Vs = 1 V. (Compare the results of Problems 2 and 3).

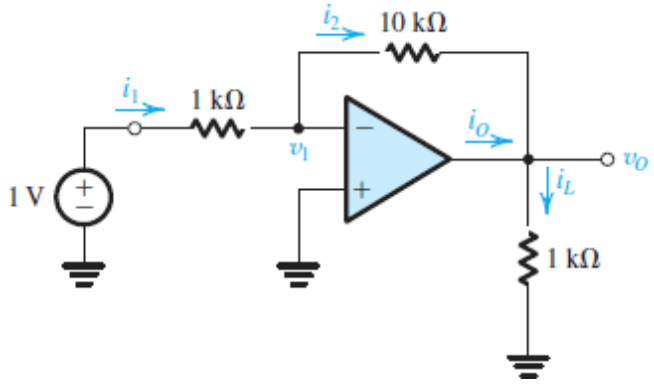
4. For the following circuit, assuming Ideal Op-Amp. If Vi = 0.5 V, calculate: (a) the output voltage Vo, and (b) the current in the 10 kΩ resistor.



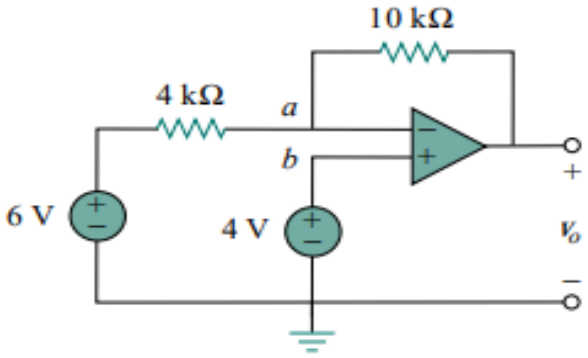
5. For the circuit shown, assuming Ideal Op-Amps, Find the voltage gain A_v and the input resistance R_{in} of the following circuits.



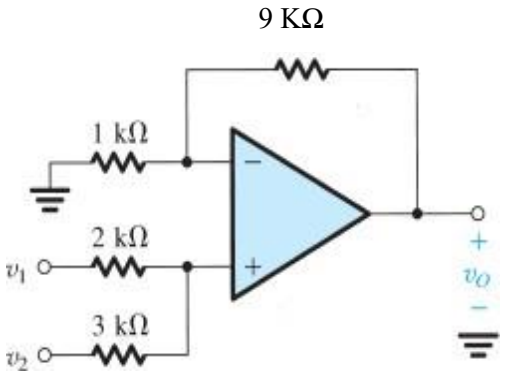
6. For the circuit shown, determine the values of V_1, i_1, i_2, V_o, i_L, and i_o. Also determine the voltage gain V_O/V_I , current gain i_L/i_I.



7. For the op amp in the following circuit, calculate the output voltage Vo using superposition and using nodal analysis.



8. Use the superposition principle to find the output voltage of the circuit shown. If 1kΩ resistor is disconnected from ground and connected to a third signal source V3, determine Vo in terms of V1, V2, and V3.



9. For the circuit shown, find the values of iI , V1, i1, i2, VO, iL, and iO. Also find the voltage gain VO/VI and the current gain iL/iI.