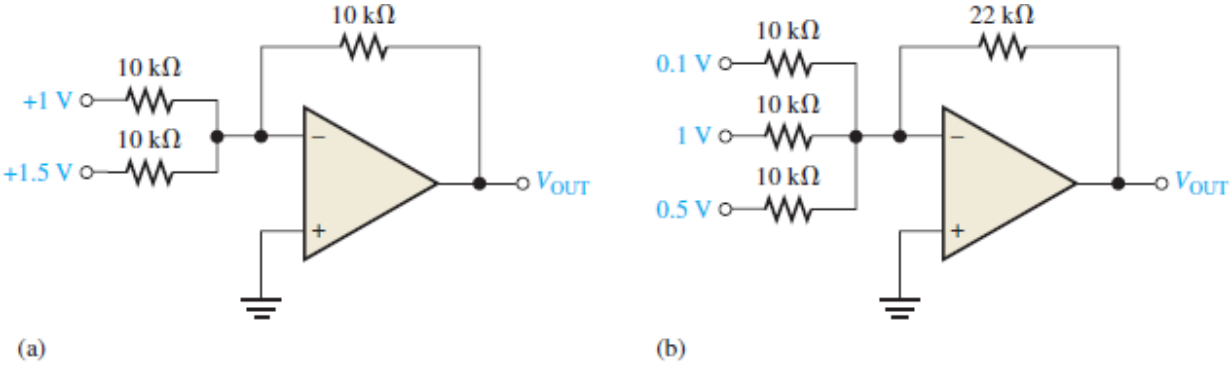
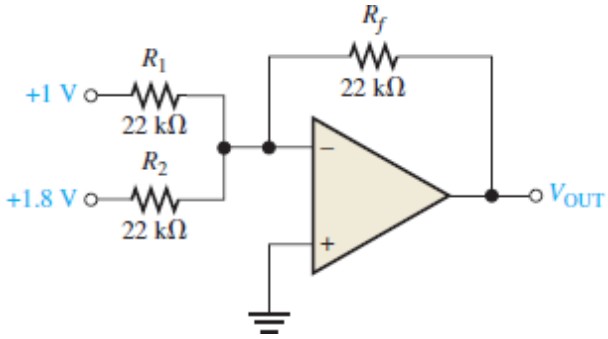
Electronic Circuits
Op- Amp
Sheet 2

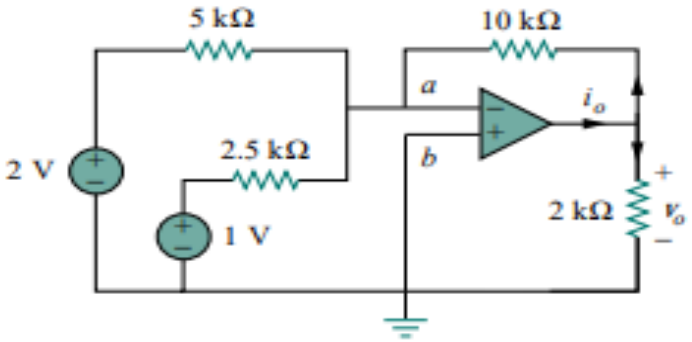
1. Determine the output voltage for each circuit shown.



2. For the circuit shown, determine V_{out}. Also, find the value of R_f necessary toproduce an output that is five times the sum of the inputs in the shown circuit.



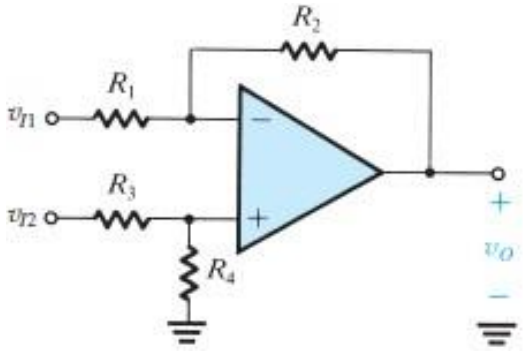
3. Calculate Vo and io for the following Op-amp circuit.



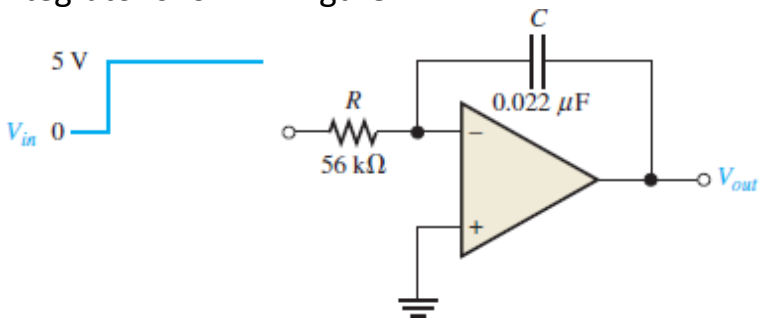
4. Design an inverting op-amp circuit to form the weighted sum Vo of two inputs V1 and V2. It is required that Vo= -(V1 +5V2). Choose values for R1, R2, and RF so That for a maximum output voltage of 10V the current in the feedback resistor will not exceed 1 mA.

5. Design Op-amp circuit with inputs V_1 and V_2 such that V_o=-5V_1+3V_2 using:
   a. Only one Op-amp. b. More than one Op-amp.

6. Consider the difference-amplifier shown, for the case $R_1 = R_3 = 2\ \text{k}\Omega$ and $R_2 = R_4 = 200\ \text{k}\Omega$.
   a. Find the value of the differential gain A_d .
   b. Find values for the resistances in the circuit so that the circuit behaves asa difference amplifier with an input resistance of 20 kΩ and a gain of 10.



7. Determine the rate of change of the output voltage in response to the step input to the integrator shown in figure.



8. A triangular waveform is applied as an input to the circuit shown. Determine what the output should be and sketch its waveform in relation to the input.