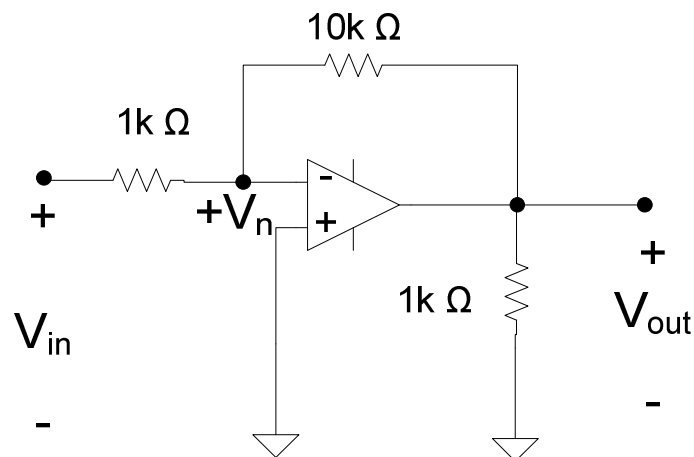
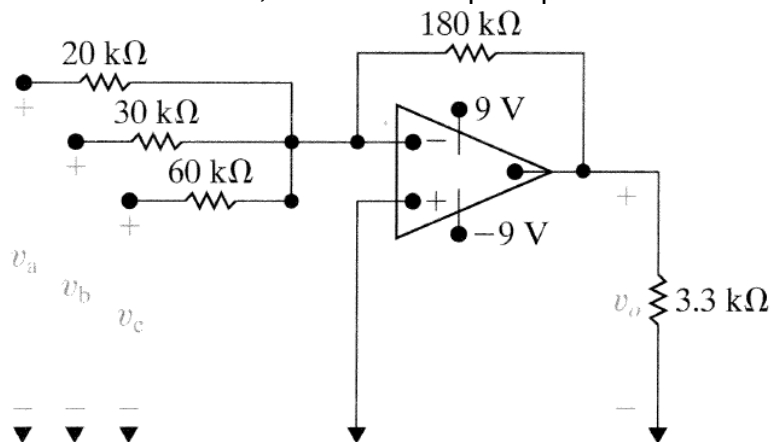


Homework Set #20
DUE Tuesday, May 2, 2017

1. For the circuit below, assume the op-amp is ideal.
 - a. What is the main function of the op-amp circuit below?
 - b. Find the value of V_n in the circuit if $V_{in} = 1V$
 - c. Find the value of V_{out} in the circuit if $V_{in} = 1V$
 - d. Find the Voltage Gain of the circuit, V_{out}/V_{in}
 - e. Assume that the op-amp supply voltages are $V_{cc} = \pm 20V$, and the op-amp saturates at the supply voltages, find the maximum range of the input voltage (V_{in}) that will allow the op-amp to operate in its linear range.

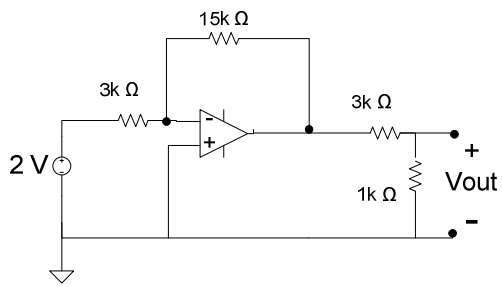


2. For the circuit below, assume the op-amp is ideal.

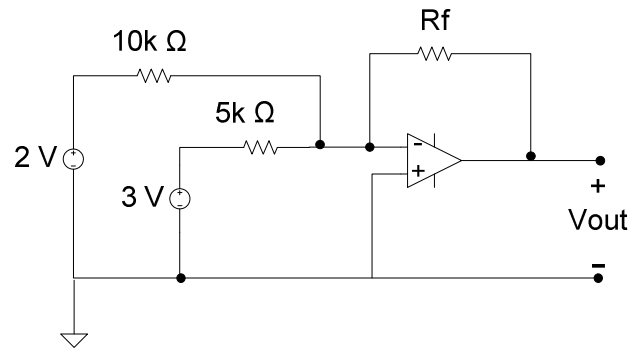


- a) What circuit configuration is shown in this figure?
- b) Find v_o if $v_a = 0.5V$, $v_b = 1.5V$, and $v_c = -2.5V$.
- c) The voltages v_a and v_b remain at $0.5V$ and $1.5V$, respectively. What are the limits on v_c if the op amp operates within its linear region?

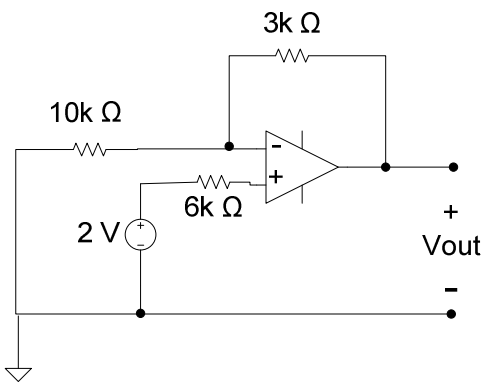
3. For the each circuit below, assume the op-amp is ideal. Find the value of V_{out} and describe what the circuit does.



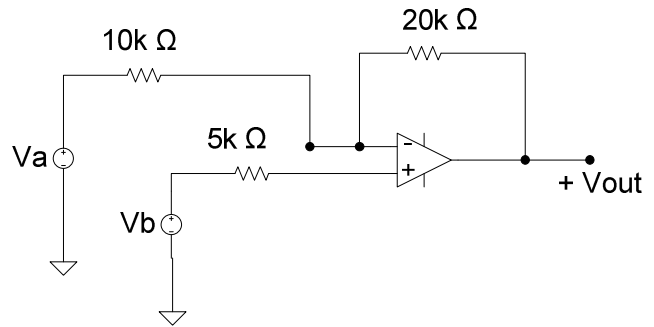
(a)



(b)



(c)



(d)