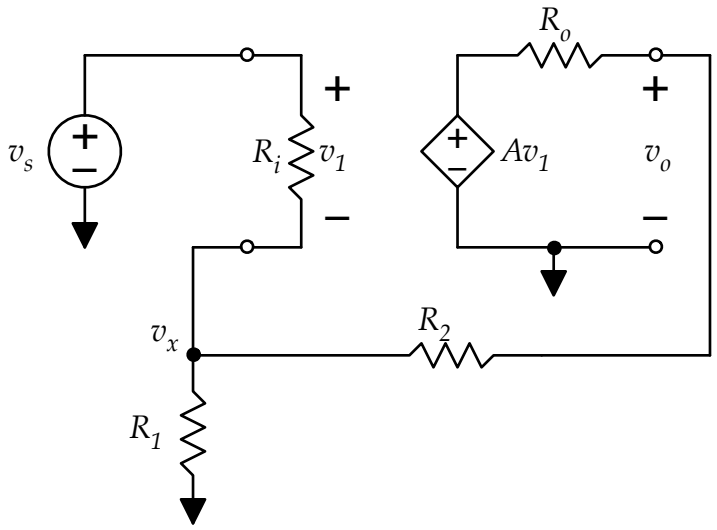
EE 201 Name_____ Sec _____
Homework set G
Due: Mar. 11, 2016

34. In the amplifier circuit below, the feedback network consists of the two resistors $R_1 = 5\ \text{k}\Omega$, and $R_2 = 50\ \text{k}\Omega$.



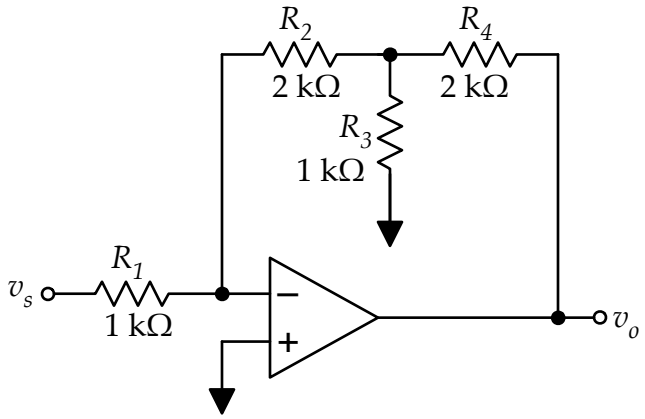
a. Start by letting the model be ideal: $R_i \to \infty$, $R_o \to 0$, and $A \to \infty$. Calculate the closed-loop gain in that case.

$G = v_o/v_s =$ _____

b. Then repeat with a model whose parameters are: $R_i = 75\ \text{k}\Omega$, $R_o = 250\ \Omega$, and $A = 250$. Note: Do not try to analyze this as a feedback problem. Just use circuit analysis to find the closed-loop gain. A couple of node equation might be one way to start. Recall that the notes had similar examples with either $R_i < \infty$, or $R_o > 0$, but not both at the same time.

$G = v_o/v_s =$ _____

35. Calculate the gain for the inverting-type circuit shown at right.

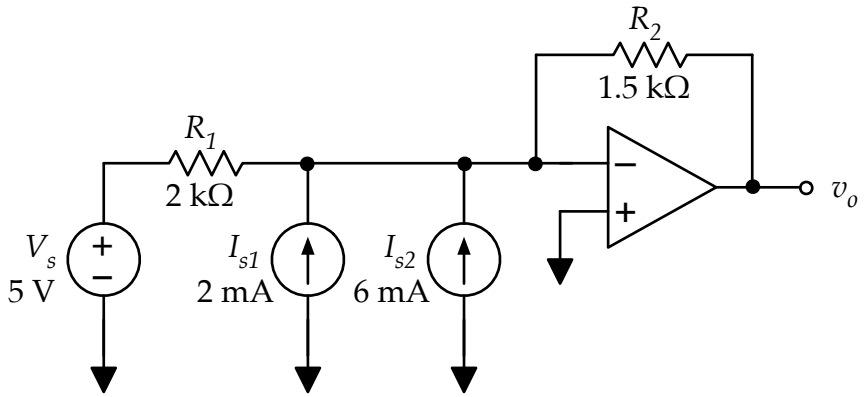


$G = v_o/v_s =$ _____

36. Design a circuit using ideal op amps and resistors that takes three inputs, v_a, v_b, and v_c and produces an output that is a weighted combination of the inputs:

$v_o = -8v_a + 6v_b - 2v_c$.

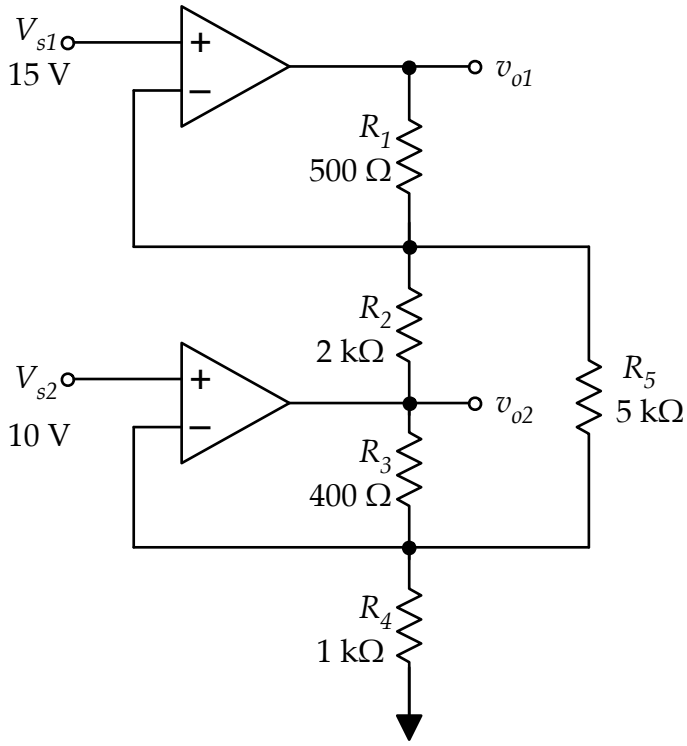
37. Find the output voltage for the circuit shown.



v_o = _____

If the amplifier saturates at $v_o = \pm 10$ V, calculate a new maximum value for I_{S2} so that output will not saturated.

38. Find the voltage v_{o1} and v_{o2} in the circuit at right.

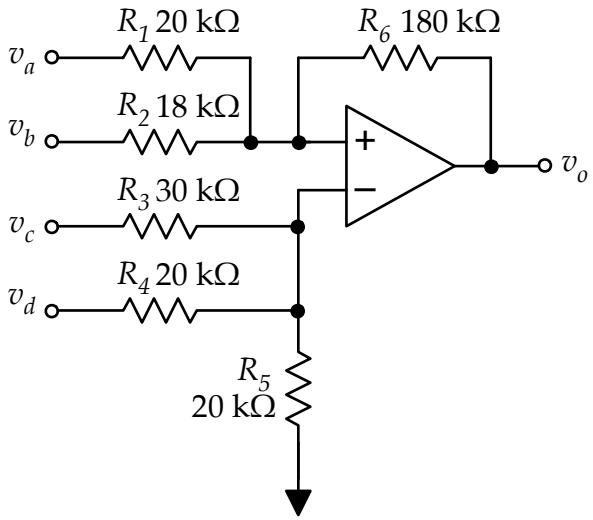


Recall: For an op amp with a negative feedback loop, $v_+ = v_-$.

v_{o1} = _____

v_{o2} = _____

39. The circuit at right might be called an "adder-subtracter". Find an expression for the output voltage, v_o, in terms of the 4 input voltages, v_a, v_b, v_c, and v_d.



v_o = _____