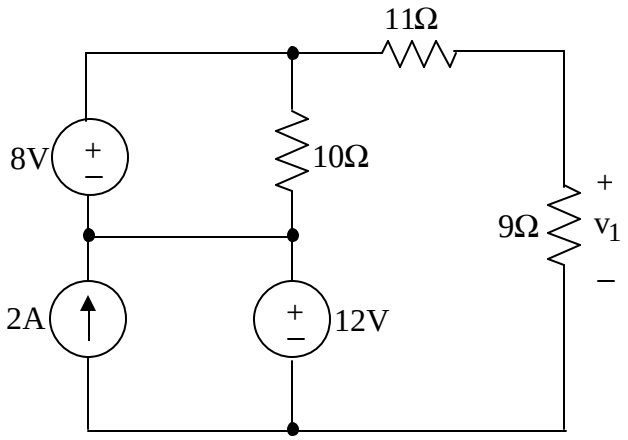
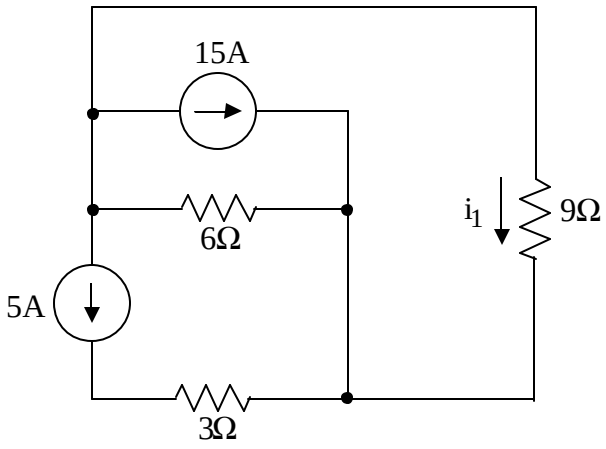
UNIVERSITY OF UTAH
ELECTRICAL AND COMPUTER ENGINEERING DEPARTMENT

ECE 1270 HOMEWORK #2 Spring 2008

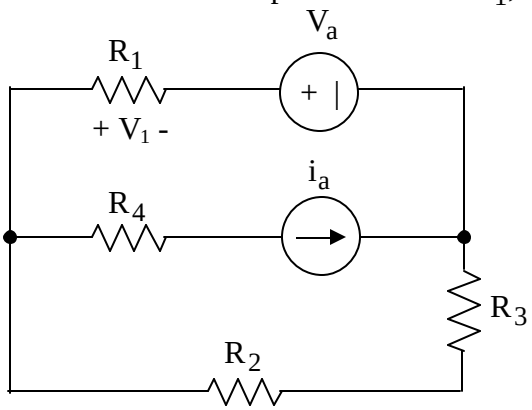
1. Calculate V_1.



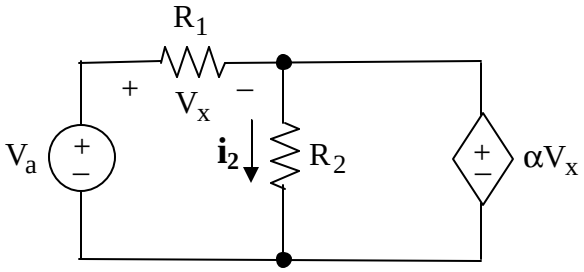
2. Calculate i_1.



3. Derive an expression for V_1. The expression must contain no other parameters than R_1, R_2, R_3, i_a, and V_a. (**Hint:** It is NOT just a voltage divider.)



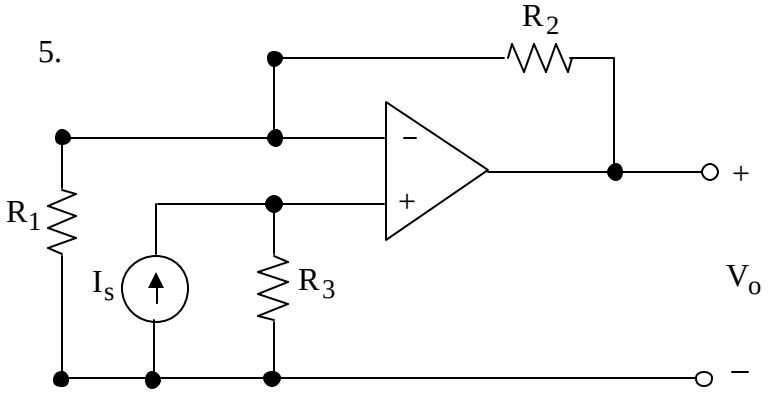
4.



a) Derive the expression for i_2 containing not more than circuit parameters α, R_1, R_2, and V_a.

b) State the symbolic expression for power in the resistor, R_2. Use only α, R_1, R_2, and V_a in the expression.

5.



The op-amp operates in the linear mode. Using an appropriate model of the op-amp, derive an expression for V_o in terms of not more than I_s, R_1, R_2, and R_3.