ECE 301
Fall Semester, 2002
HW Set #3

Due: September 17, 2002
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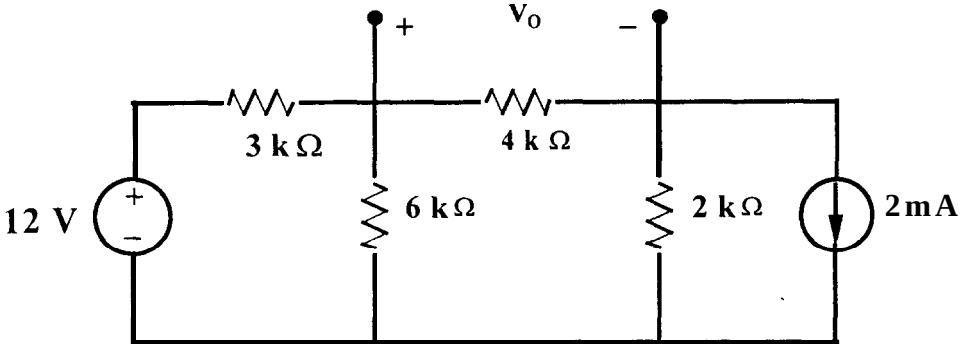
Name _____
Print (last, first)

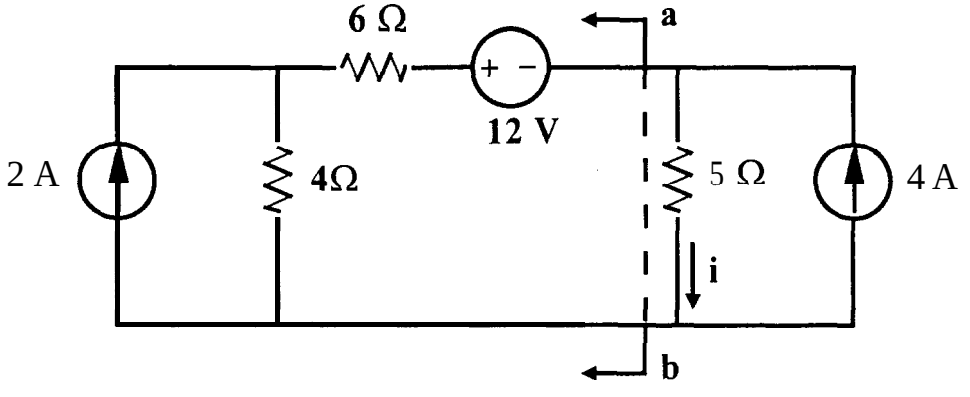
You should work all of the following problems which will be graded. Use engineering paper. Work only on one side of the paper. Use this sheet as your cover sheet, placed on top of your work and stapled in the top left-hand corner. Number the problems at the top of the page, in the center of the sheet. Do neat work. **Underline your answers. Show how you got your equations.** Each problem counts 10 points. **Be sure to show how you got your answers.**

(1) Use Thevenin's theorem to find (a) V_0 (V_{TH}) and R_{TH} for the network shown below. (b) Draw the Norton equivalent circuit.



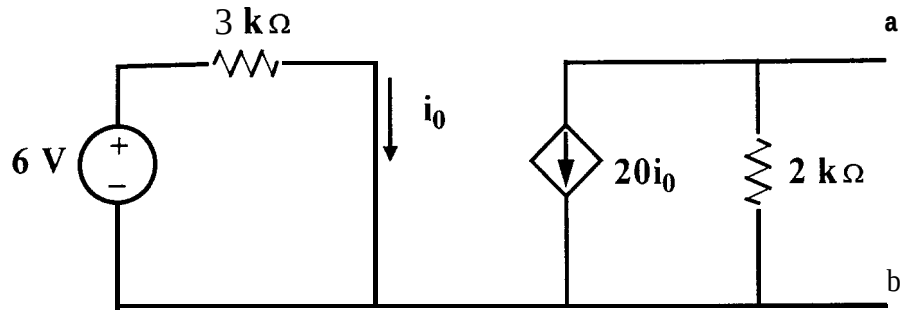
Ans: V_{TH} = 6 V, R_{TH} = 4 k Ω

(2) Obtain the Norton equivalent of the circuit shown below, to the left of terminals a-b. Use the result to find the current, i.



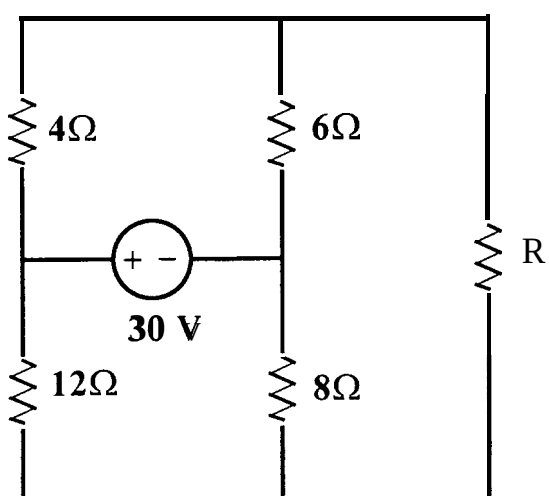
Ans: I_{NORTON} = -0.4 A, R_N = 10 ohms, i = 2.4 A

(3) For the transistor model shown in the diagram below, obtain the Thevenin voltage and Thevenin resistance seen looking into terminals a-b.



Ans: $R_{TH} = 2\ k\Omega$, $V_{TH} = -80$ V

(4) Consider the circuit shown below. Find the value of R that allows maximum power to be transferred to this resistor from the circuit. Calculate this power.



Ans: $R_{TH} = = 7.2$ ohms, $V_{TH} = 6$ V, p = 1.25 W