EE 40 Homework #3

Due Tuesday, February 18, 2003

In drop box before class, in 477 Cory before 7PM, or at beginning of review session

Highly suggested: Make a copy of your answers to this homework to compare to the solutions

Pass/Fail Grading: 30 Points for reasonable effort, 0 points given only if really off-track

Problem 1: Use nodal analysis to find the power absorbed by the 25 V voltage source.



Problem 2: Use nodal analysis to find the power absorbed by the dependent current source.



Problem 3: Find the Thevenin equivalent with respect to terminals a and b.



Problem 4: Find the Thevenin equivalent with respect to a and b.



Problem 5: Suppose I have a circuit in a box, and I can't see exactly what's inside, but I do know that the circuit contains only resistors, constant independent voltage and current sources, and linear dependent sources. The controlling voltages and currents for the dependent sources are also in the box.

I perform one experiment: When I attach a 5 V battery to the circuit, I measure a 200 mA current in the direction shown. (The ammeter is working correctly!) The internal resistance of the battery is 3 Ω , and the internal resistance of the ammeter is 1 Ω .



Can I find the Thevenin equivalent of the circuit in the box with this information? If yes, find the Thevenin equivalent. If no, explain why it is not possible to find the equivalent with this information.

Problems adapted from *Electric Circuits* by Nilsson and Riedel, the supplemental text for EE 40.