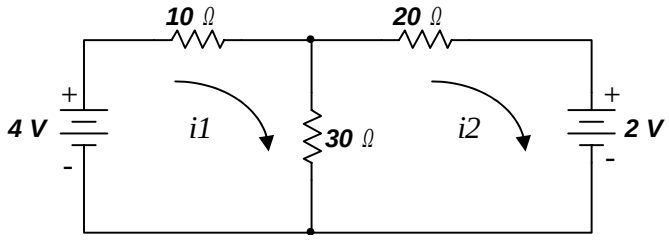
Massachusetts institute of Technology
Department of Nuclear Science and Engineering
Department of Electrical Engineering and Computer Science

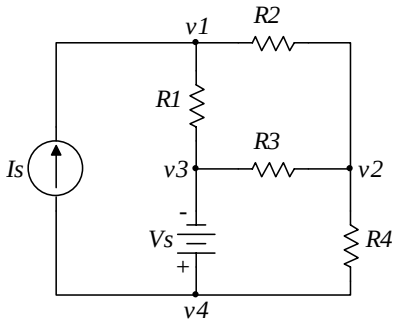
22.071, 6.071 - Introduction to Electronics, Signals and Measurement
Spring 2006

Homework 3
Due 3/1/06

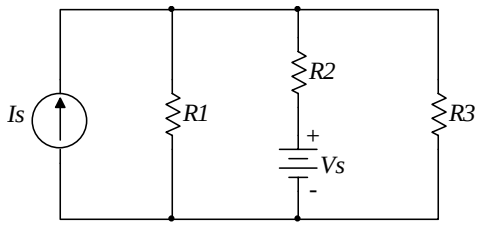
Problem 1.
Find the currents *i1* and *i2* for the following circuit. What is the magnitude and direction of the current flowing through the 30Ω resistor?



Problem 2.
Using nodal analysis derive and put in a matrix form the equations for the node voltages of the circuit



Problem 3.
Using the principle of superposition, calculate the current through resistor *R3.*



For the same circuit, calculate the Thevenin equivalent resistance seen by resistor *R3*. Also find the Thevenin voltage and the Norton current seen by load *R3.*

Problem 4.
For the Wheatstone bridge circuit determine the Thevenin equivalent circuit seen by resistor *RL*.