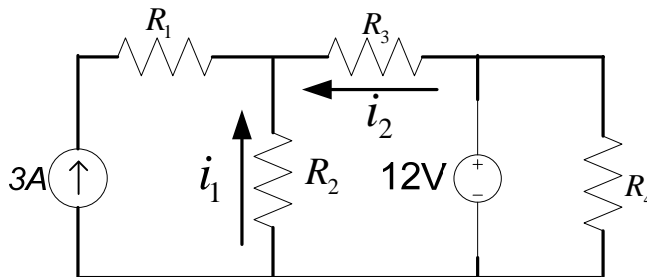


CG1108 AY2010/11 Sem2

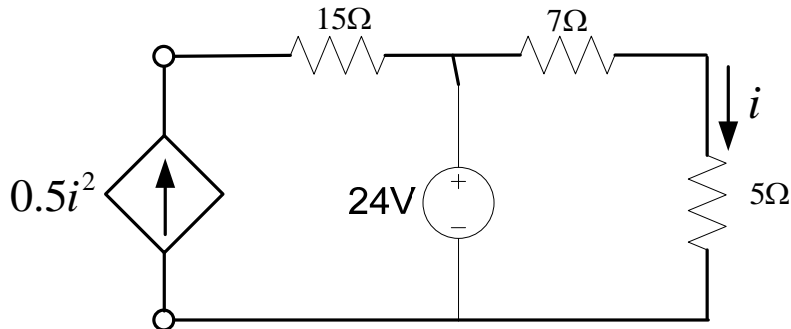
Tutorial 2

1. For the circuit shown in the figure find:
 - a. The currents i_1 and i_2 .
 - b. The power delivered by the 3-A current source and by the 12-V voltage source.
 - c. The total power dissipated by the circuit.

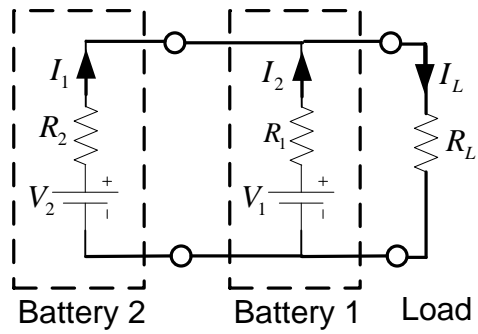
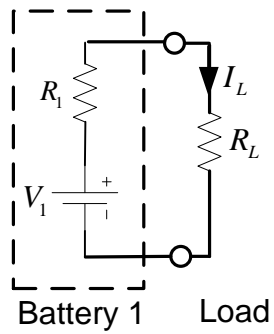
Let $R_1=25\ \Omega$, $R_2=10\ \Omega$, $R_3=5\ \Omega$, $R_4=7\ \Omega$ and express i_1 and i_2 as functions of v .



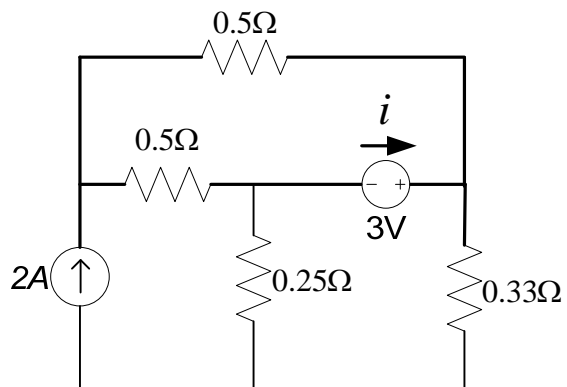
2. Determine the power delivered by the dependent source in the circuit of the figure.



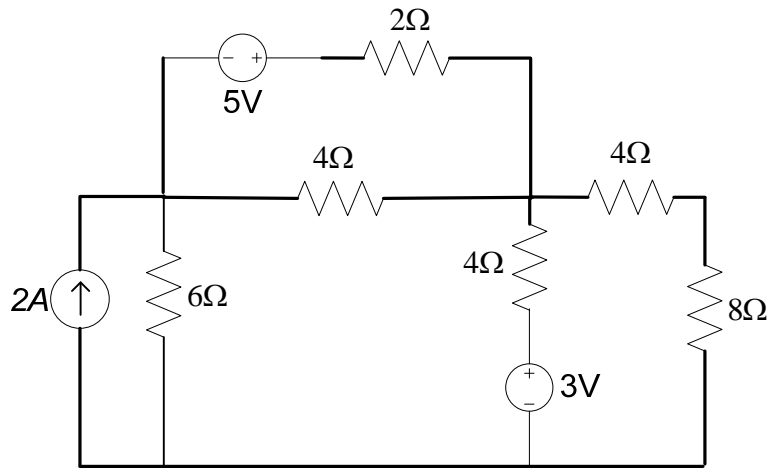
3. Consider NiMH hobbyist batteries shown in the circuit of the figure:
 - a. If $V_1=12.0\text{V}$, $R_1=0.15\ \Omega$, $R_L=2.55\ \Omega$, find the load current I_L and the power dissipated by the load.
 - b. If we connect a second battery in parallel with battery 1 that has voltage $V_2=12\text{V}$ and $R_2=0.28\ \Omega$, will the load current I_L increase or decrease? By how much? Use mesh current analysis method.



4. Using node voltage analysis in the circuit of the figure, find the current i through the voltage source.



5. For the circuit in the figure, use mesh current analysis to find the matrices required to solve the circuit, and solve for the unknown currents.



6. Using KCL, perform node analysis in the circuit shown in figure and determine voltage across R_4 . Note that one source is a controlled voltage source! Let $V_s=5V$, $A_v=70$, $R_1=2.2k\Omega$, $R_2=1.8k\Omega$, $R_3=6.8k\Omega$, $R_4=220\Omega$.

