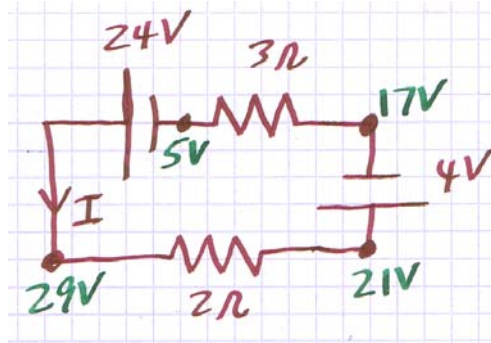


CLASS EXERCISE #9 - 29 June 2005

An electric circuit consists of a 23-V battery and a 4-V battery facing in opposite directions and two resistors, one 3 ohms and the other 2 ohms, all in series.



(a) Draw this circuit, determine the current in this circuit and fill out its $R - I - \Delta V - P$ table, including separate rows for each battery and each resistor.

R	I	ΔV	P
3Ω	4 A	12 V	48 W
2Ω	4 A	8 V	32 W
---	4 A	24 V	96 W
---	4 A	- 4 V	- 16 W

(b) Check that the power supplied by the two batteries equals the power dissipated by the two resistors. (Add them up and show that they are equal.)

The batteries supply $96 \text{ W} - 16 \text{ W} = 80 \text{ W}$ of power, and the resistors dissipate $48 \text{ W} + 32 \text{ W} = 80 \text{ W}$ of power, the same value.

(c) On your diagram, determine the electric potential at each point between each pair of circuit elements, letting the negative terminal of the 24-V battery be at $V = 5 \text{ V}$.