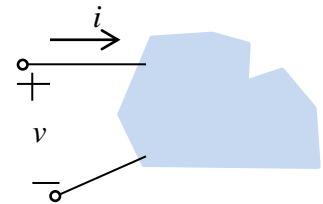
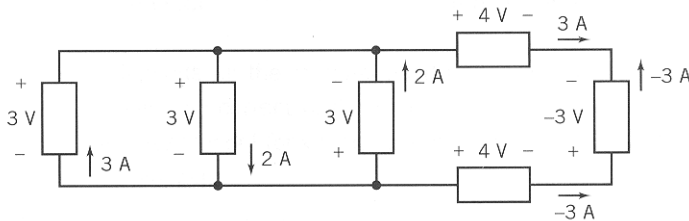


ENGR&204 Spring 2011 Homework # 1 Due Monday 4/11 at 4 pm

- 1) A portable CD player uses 2 AA batteries in series to produce 3.0 v to the player circuit. The two AA cells store a total of 100 W's of energy. If the player is drawing a constant current of 5.0 mA from the battery pack, how long will the CD player operate at normal power?
- 2) The power supplied by a certain battery is a constant 6.0 W over the first 5 minutes, zero for the next 2 min, a value that increases linearly from zero to 10 W during the next 10 minutes, and a power that decreases linearly from 10W to zero in the following 7.0 minutes. A) What is the total energy in Joules expended during this 24 minute interval? B) What is the average power in W during this time?
- 3) Let $i = 3te^{-100t}$ mA and $v = (0.006 - 0.6t)e^{-100t}$ V for the circuit shown. A) What power is being absorbed by the circuit element at $t = 5$ ms? B) What is the energy delivered to the element in the interval $0 < t < \infty$?



- 4) Are all of the voltages and currents in the circuit shown correct? Do a power check to find out: Total power used must equal total power supplied.



- 5) A two terminal element absorbs an energy w as shown in the graph below. If the current entering the positive terminal is $i = 100 \cos(1000\pi t)$ mA, find the element voltage at $t = 1$ ms and at $t = 4$ ms.

