

EE 201-03 ELECTRIC CIRCUITS I

HOME WORK # 1

1. One 9 V battery supplies 100 mA to a camping flashlight. How much energy does the battery supply in 5 hours?
2. Two electric circuits, represented by boxes A and B are connected as shown in the figure. For each of the following sets of numerical values, calculate the power in the interconnection and state whether the power is flowing from A to B or vice versa.
 - a. $I = 5 \text{ A}, v = 120 \text{ V}$
 - b. $I = -8 \text{ A}, v = 250 \text{ V}$
 - c. $I = 16 \text{ A}, v = -150 \text{ V}$
 - d. $I = -10 \text{ A}, v = -480 \text{ V}$

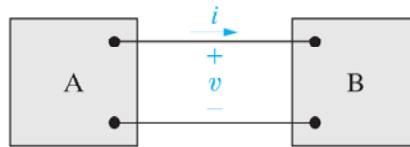


Figure 01-09-02UNP1.12
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3. The voltage and current at the terminals of the circuit element shown are zero at $t < 0$. For $t \geq 0$ they are:

$$v = e^{-500t} - e^{-1500t} \text{ V}$$

$$i = 30 - 40e^{-500t} + 10e^{-1500t} \text{ mA}$$

- a. Find the power at $t = 1 \text{ ms}$.
- b. How much energy is delivered to the circuit element between 0 and 1 ms.
- c. Find the total energy delivered to the element.

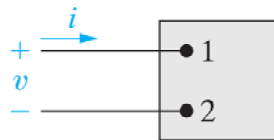


Figure 01-05
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4. The numerical values for the currents and voltages in the circuit are given in the table. Find the total power developed in the circuit.

Element	Voltage (mV)	Current (A)
a	150	0.6
b	150	-1.4
c	100	-0.8
d	250	-0.8
e	300	-2.0
f	-300	1.2

