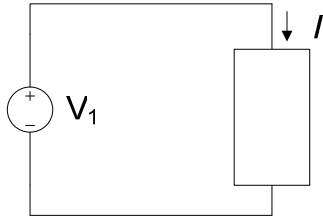


Problem Set 2 (Fall 2008)

2.1 Determine the amount of power absorbed or supplied by the element below if:

a) $V_1=6\text{V}$, $I=3\text{A}$; and

b) $V_1=-6\text{V}$, $I=-3\text{A}$

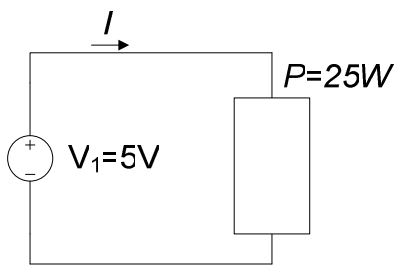


2.2 Repeat 2.1 for:

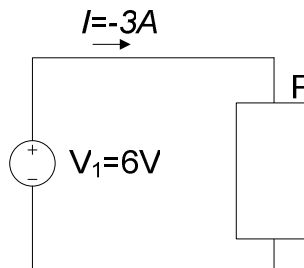
a) $V_1=-8\text{V}$, $I=5\text{A}$; and

b) $V_1=8\text{V}$, $I=-5\text{A}$

2.3 Determine the missing quantity in the circuits below:

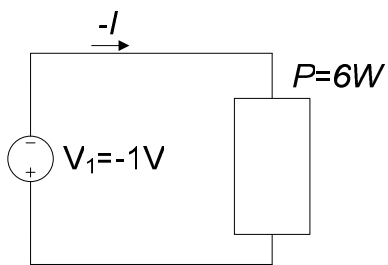


a)

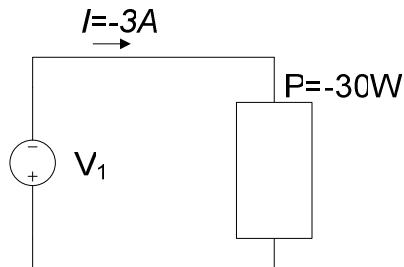


b)

2.4 Determine the missing quantity in the circuits below:

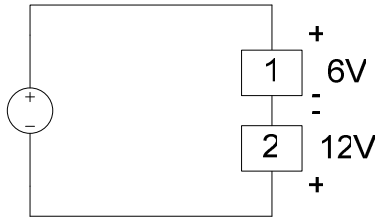


a)

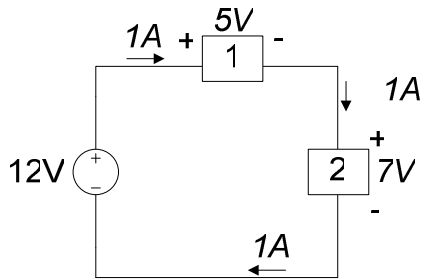


b)

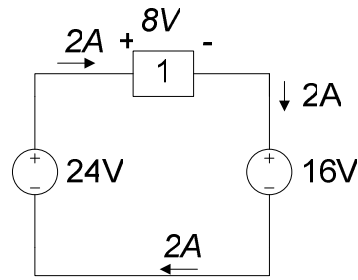
2.5 Two elements are connected in series, as shown below. Element 1 supplies 48 W of power. Is element 2 absorbing or supplying power, and how much?



2.6 Determine the power that is absorbed or supplied by the circuit elements below:

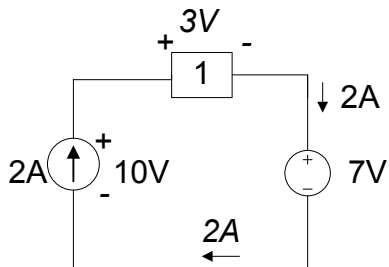


a)

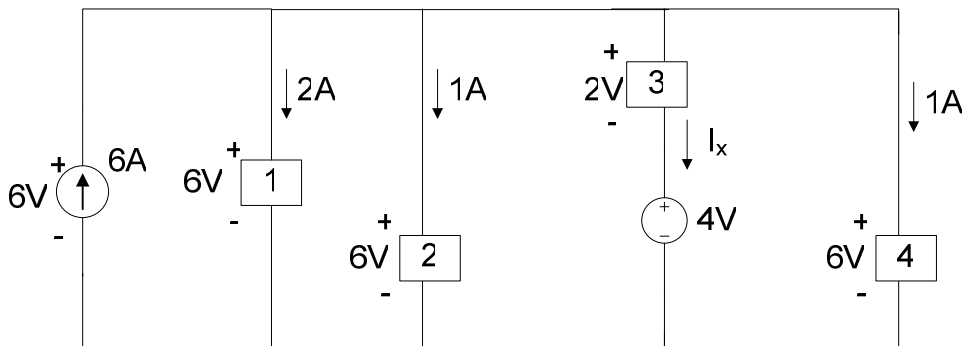


b)

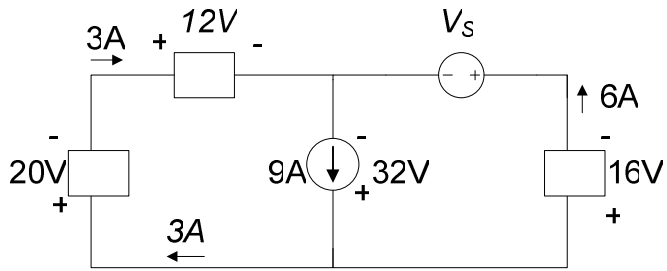
2.7 Determine the power that is absorbed or supplied by the circuit elements below:



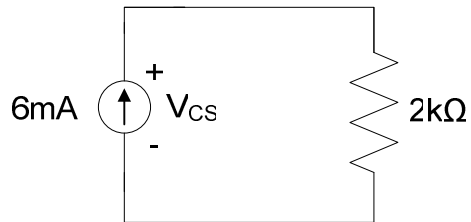
2.8 Find I_x in the network below:



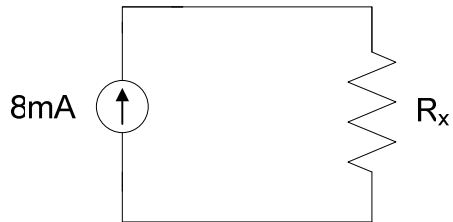
2.9 Is the source V_s in the network below absorbing or supplying power, and how much?



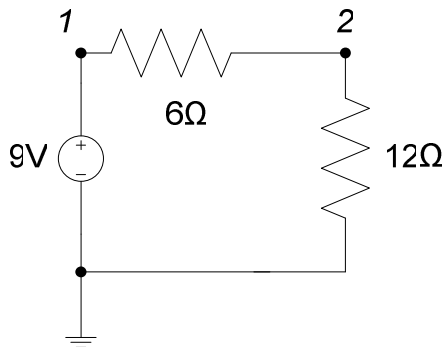
2.10 In the circuit below, find the voltage across the current source and the power absorbed by the resistor.



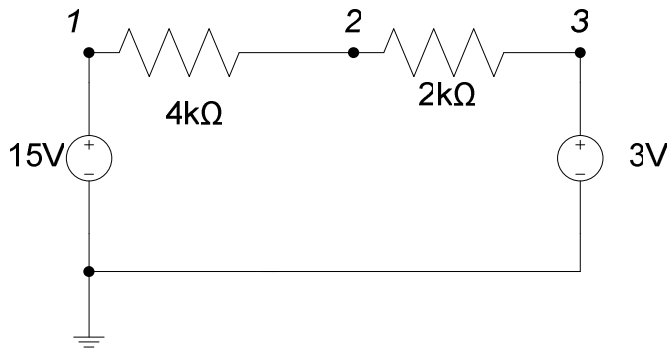
2.11 In the network below, the power absorbed by R_x is 24mW. Find R_x .



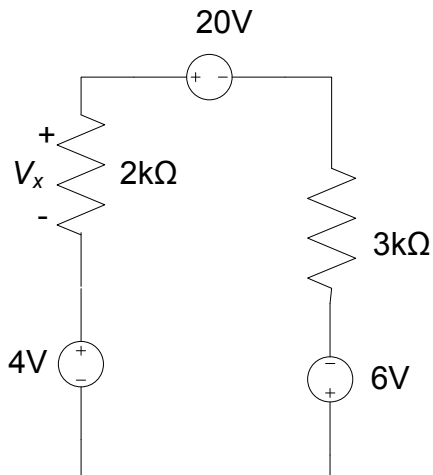
2.12 Find V_{12} in the circuit below.



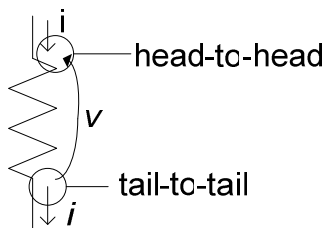
2.13 Find V_2 in the circuit below.



2.14 Find V_x in the circuit below.



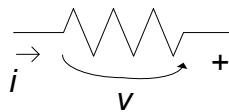
TAs please use our conventions:



$$\left. \begin{aligned} v &= i \cdot R \\ p &= v \cdot i \end{aligned} \right\}$$

If the head-to-head convention is not satisfied, then either v or i must be

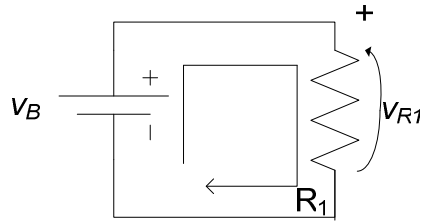
made negative. E.g.



$$\therefore v = -i \cdot R$$

$p > 0$ is power consumed e.g. in a resistor
 $p < 0$ is power sourced e.g. from a battery

KVL: voltage is + if one comes to the + side of a voltage



e.g.

$$\text{KVL: } -V_B + V_{R1} = 0$$

(later KCL: current entering a node is +)