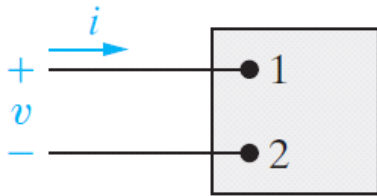


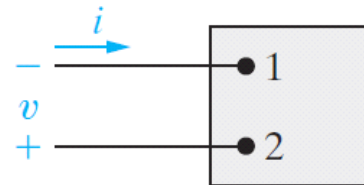
Exercise 1, EEL 3004c, Dr. Nazanin Rahnavard

Question 1: Assume that a 50 V voltage drop occurs across an element from terminal 1 to terminal 2 and that a current of 250 mA enters terminal 2.

1. Specify the values of v and i for the polarity references shown in Fig. (a), (b).
2. Calculate the power associated with the circuit element.
3. Is the circuit element absorbing or delivering power?



(a)



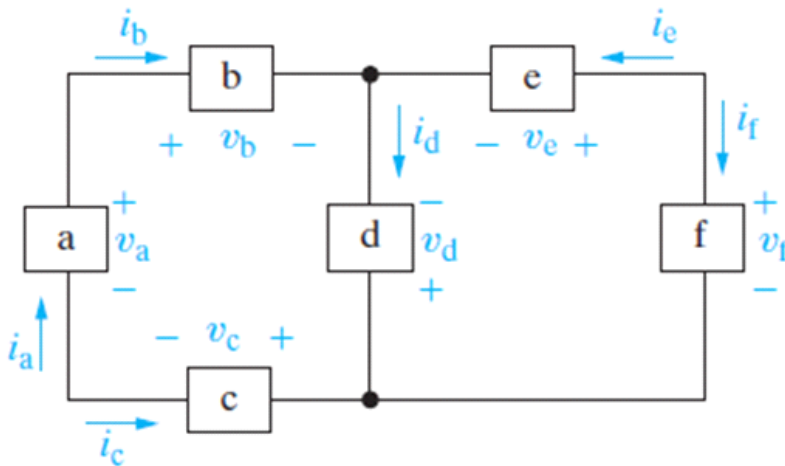
(b)

Exercise 1, Question 2

The numerical values for the currents and voltages in the circuit for the following figure are given in Table P1.29. Find the total power developed in the circuit.

TABLE P1.29

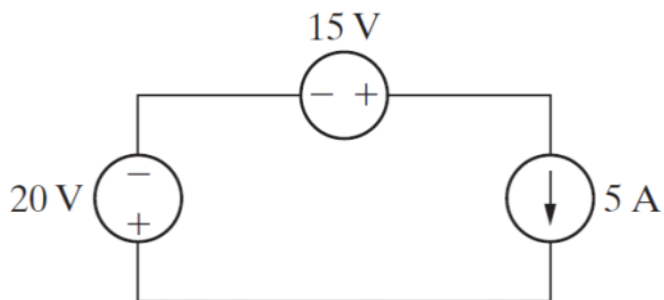
Element	Voltage (V)	Current (mA)
a	40	-4
b	-24	-4
c	-16	4
d	-80	-1.5
e	40	2.5
f	120	-2.5



Exercise 1, Question 3

- Is the interconnection of ideal sources in the circuit in Fig. P2.1 valid? Explain.
- Identify which sources are developing power and which sources are absorbing power.
- Verify that the total power developed in the circuit equals the total power absorbed.
- Repeat (a)–(c), reversing the polarity of the 20 V source.

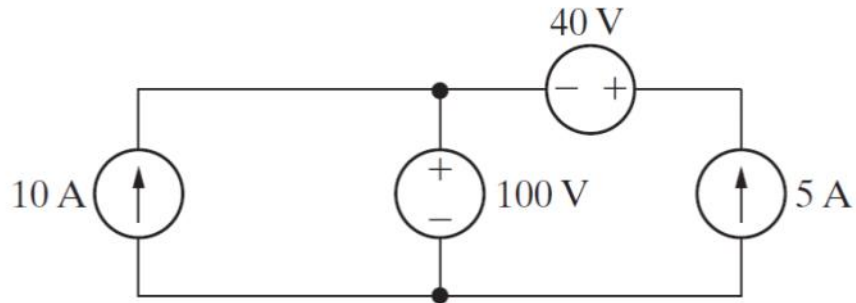
Figure P2.1



Exercise 1, Question 4

If the interconnection in Fig. P2.3 is valid, find the power developed by the current sources. If the interconnection is not valid, explain why.

Figure P2.3



Exercise 1, Question 5

Consider the interconnection shown in Fig. P2.7.

- What value of α is required to make this a valid interconnection?
- For this value of α , find the power associated with the current source.
- Is the current source supplying or absorbing power?

Figure P2.7

