

Solution Quiz 1

Electrical Circuits 1

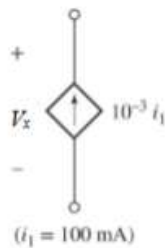
TE1002

Tecnológico de Monterrey

Dr. Juan-Manuel CAMPOS-SANDOVAL

Name _____

1.



In the given figure, $V_x = 8 \text{ V}$.

The power absorbed by all the elements in the circuit is

The power absorbed by all the elements in the circuit is mW.

Explanation:

The power absorbed by each element in the circuit can be calculated as follows:

$$p = vi$$

where v is the voltage and i is the current.

Substituting the values in the equation, we get

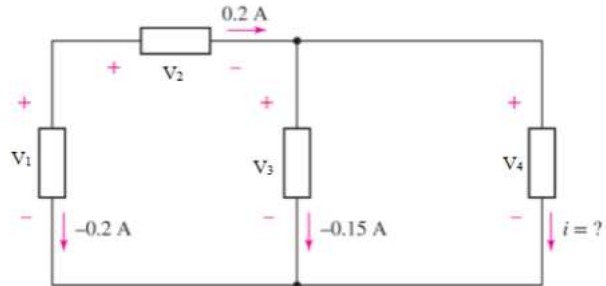
$$p = 8 \text{ V} \times (-10^{-3} \times 100 \times 10^{-3} \text{ A}) = -0.8 \text{ mW}$$

The power absorbed by all the elements in the given circuit is -0.8 mW .

2.

Award: 50.00 points Problems? [Adjust credit](#) for all students.

Determine the unknown current for the circuit in the given figure and find the power that is supplied or absorbed by each element. Confirm that the total power is zero. In the given figure $V_1 = 5\text{ V}$, $V_2 = 1\text{ V}$, $V_3 = 4\text{ V}$, and $V_4 = 4\text{ V}$.



The power absorbed by V_1 is W.

The power absorbed by V_2 is W.

The power absorbed by V_3 is W.

The power absorbed by V_4 is W.

The unknown current in the circuit is A.

Explanation:

The power absorbed or supplied by each element in the given circuit is calculated as follows:

$$5\text{V element : } p = vi = 5\text{V} \times (-0.2\text{ A}) = -1\text{ W}$$

The minus sign indicates that the element is supplying power.

$$1\text{V element : } p = vi = 1\text{V} \times (0.2\text{ A}) = 0.2\text{ W}$$

Here the element absorbs power.

$$4\text{ V element : } p = vi = 4\text{V} \times (-0.15\text{ A}) = -0.6\text{ W}$$

Taking the summation of the power absorbed or supplied by all the elements on the right-hand side we get

$$-1\text{ W} + 0.2\text{ W} + -0.6\text{ W} = -1.4\text{ W}$$

Since the total power must sum to zero, the power absorbed by 4 V element on the right is 1.4 W.

The unknown current in the given circuit is calculated as follows:

$$i = \frac{p}{v}$$

Substituting values in the equation, we get

$$i = \frac{1.4\text{ W}}{4\text{ V}} = 0.35\text{ A}$$

The power absorbed by 5 element is -1 W.

The power absorbed by 1 element is 0.2 W.

The power absorbed by 4 element is -0.6W.

The power absorbed by 4 V element on the right is 1.4 W.

The unknown current in the circuit is 0.35 A.