

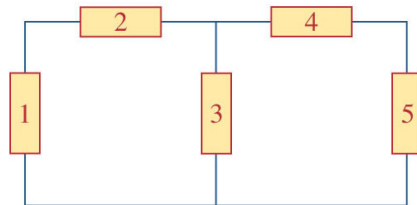
EGR 220 HW 1

Due Feb 6, 2020

- 1) Set up each problem as directed in the homework cover sheet.
- 2) Be sure to use the **passive sign convention**, defined in Chapter 1, as needed.

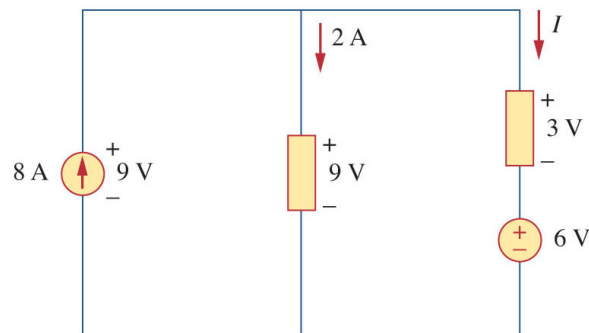
Problem 1:

The figure shows a circuit with five elements. If $p_1 = -205\text{W}$, $p_2 = 60\text{W}$, $p_4 = 45\text{W}$, $p_5 = 30\text{W}$ calculate the power received or delivered by element 3, use the correct sign (+ or -) for your answer and state if element 3 is receiving or delivering power.



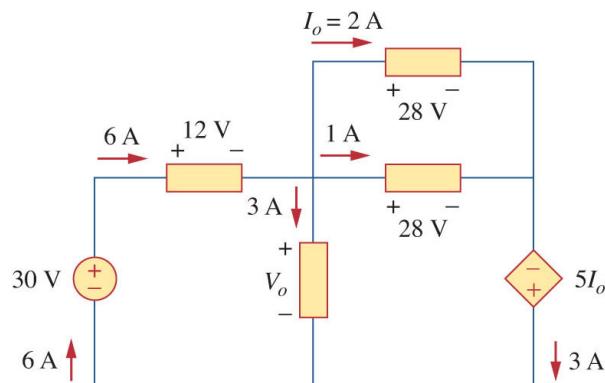
Problem 2:

Find I in the circuit below.



Problem 3:

Find V_o in the circuit below.



Problem 4:

A 12V car battery supplies a current of 150 mA to a lightbulb. Calculate:

- the power absorbed by the bulb,
- the energy absorbed by the bulb over an interval of 20 minutes.

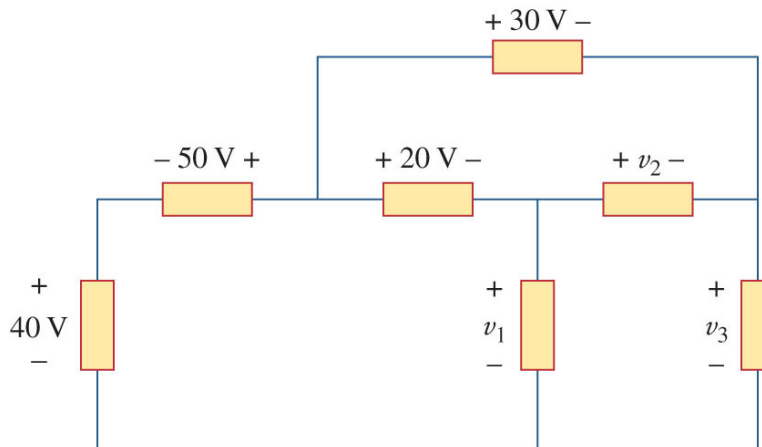
Problem 5:

A 30W light bulb is connected to a 120V source and is left on continuously in an otherwise dark staircase. Determine:

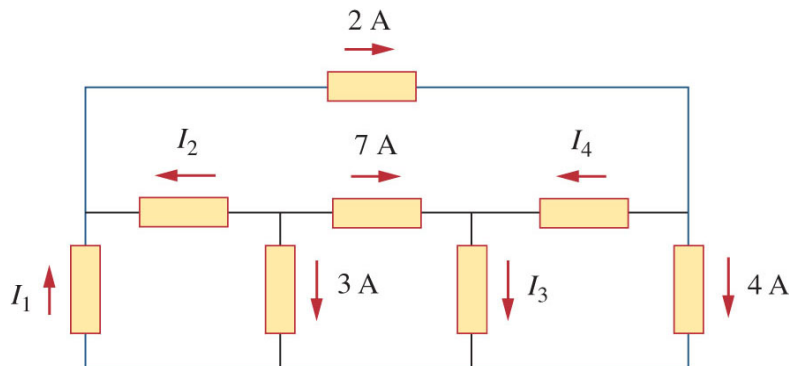
- the current through the lightbulb.
- the cost of operating the light for one (non-leap) year if electricity costs 12 cents per kWh.

Problem 6:

Find v_1 , v_2 , and v_3 in the circuit below.

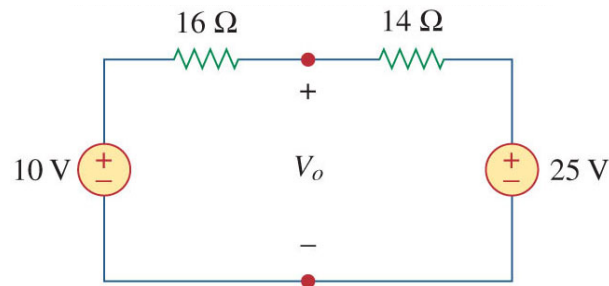
**Problem 7:**

For the circuit below, use KCL to find the branch currents I_1 to I_4 .



Problem 8:

Use KVL to determine V_o in the circuit below.



INSTRUCTIONS

For this and all subsequent homework sets:

- Print out, follow, and complete the Homework Cover Sheet (for this and ALL subsequent HW sets), and include it as the first page in your homework that you submit.
- Complete homework problems on engineering paper
- Write out enough of the problem statement so that it is clear what you are doing (do not copy the problem from the text word for word)
- Include the circuit diagram, and label it as needed.
- Clearly show all your work
- Clearly show (circle) your final answer, and be sure to include the units.

- Complete a first attempt of each problem **before** working with friends and before looking at the posted solutions and correcting your own work.
- Be sure to do your corrections *in a different color ink than your original work*