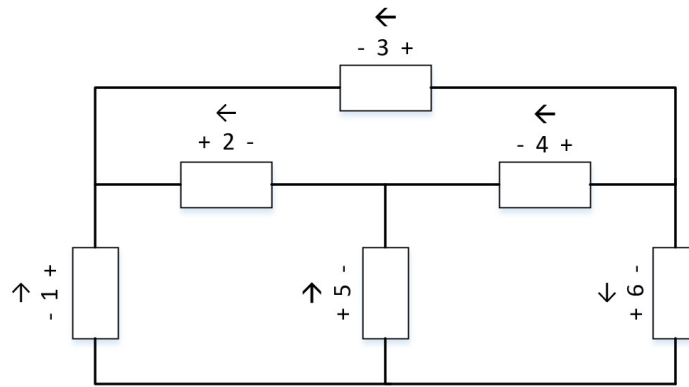
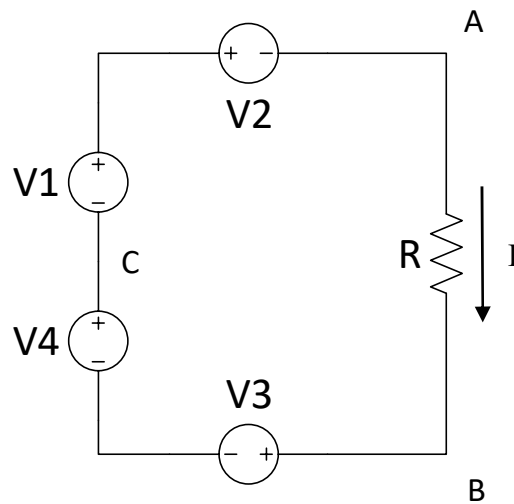


ECE 110 Exam 1 Review Session Worksheet

1. Given that  $V_1 = -9V$ ,  $V_3 = 5V$ ,  $V_4 = -6V$  and  $I_2 = -2A$ ,  $I_3 = 5A$ ,  $I_6 = -7A$ , find the remaining unknown voltages and currents, and power for each component. Be careful of signs!

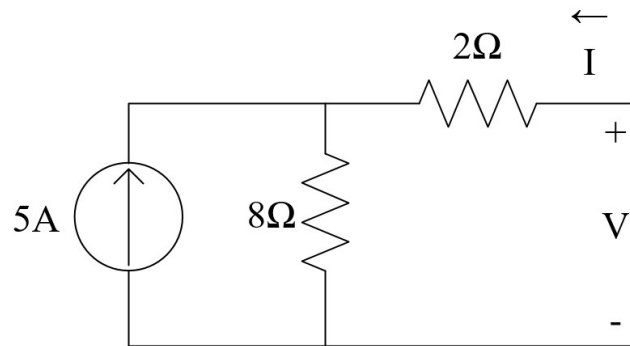


2. Given that  $V_1 = 1V$ ,  $V_2 = -6V$ ,  $V_3 = 7V$ ,  $V_4 = -2V$ , and  $R = 10\Omega$ , determine  $V_{AB}$ ,  $V_{BC}$ , and  $I$ .



3. Consider a PWM waveform with duty cycle = 64%, peak-to-peak voltage = 5V, and frequency = 20kHz.
  - a) What is the  $V_{\text{rms}}$  of this PWM waveform?
  - b) Suppose we know that this PWM can deliver an average power of 0.25W to an unknown resistor. What is the resistance of this unknown resistor?
  - c) Suppose we want to generate a sinusoidal waveform that provides the same average power at the same frequency. What should be the amplitude of this sinusoid?
  - d) Do the sinusoid and PWM waveform deliver the same amount of power to the resistor?

4. Find the I-V Characteristic of the following circuit. Be careful of the direction of I!



5. Compute the power of each of the following elements.

