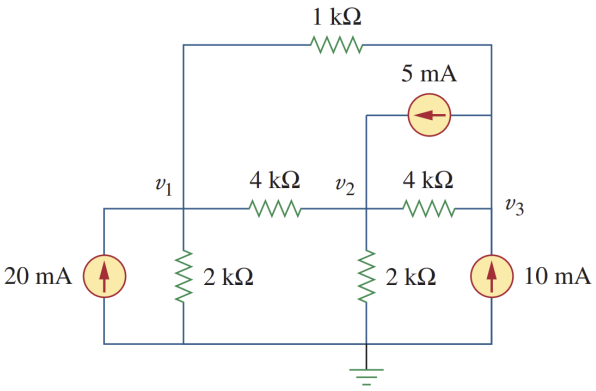
VE215 2023Su Assignment 2

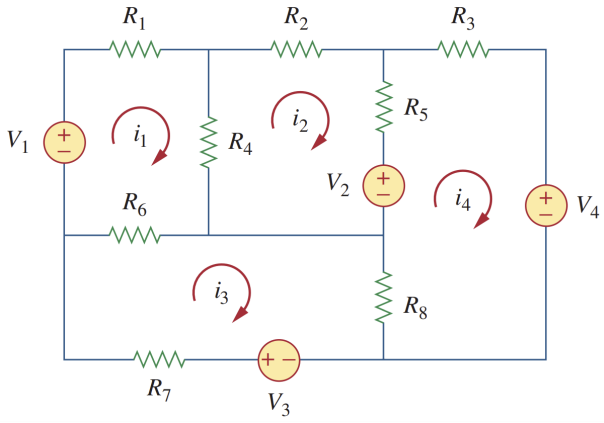
Due Date: 23:59, June 3rd, 2023

In order to get full marks, you shall write all the intermediate steps of calculation or proof unless otherwise indicated.

Exercise 2.1 (30%)

Solve the voltages of the first circuit, and the currents of the second circuit, by inspection.





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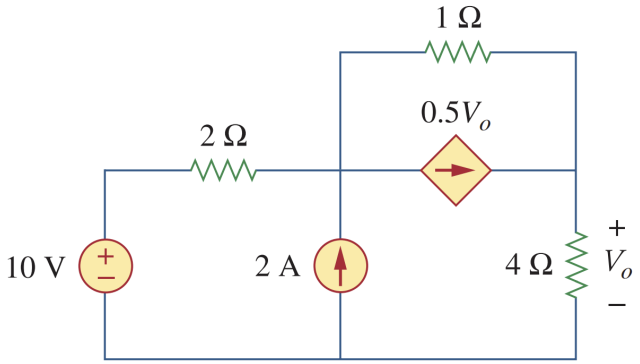
Exercise 2.2 (15%)

Use superposition to find V_0 in the circuit below.



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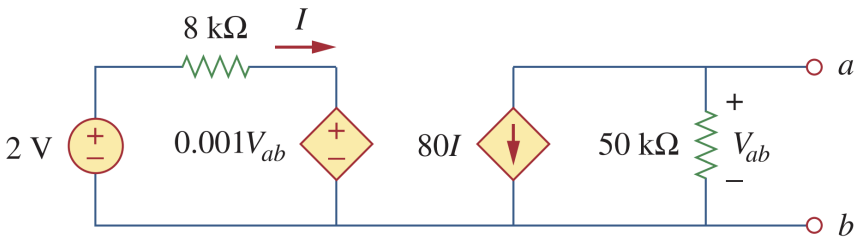
Exercise 2.3 (35%)

(a) (20%) Obtain the Thevenin and Norton equivalent circuit at the terminal a-b. Draw the circuit.

(b) (5%) Calculate the voltage V_{ab} if now a resistor of $10k\Omega$ connects between terminal a-b.

(c) (10%) Calculate the maximum power transferred to a resistor that connects between terminal a-b. Also calculate the resistance of that resistor.



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Exercise 2.4 (20%)

Calculate the maximum power that can be delivered to the variable resistor R in the following circuit.