NVA Worksheet

MEMS 0031 - Electrical Circuits

February 23, 2021

Problem #1

- Use NVA to solve for the current i from the current source for the circuit shown in Fig. 1.

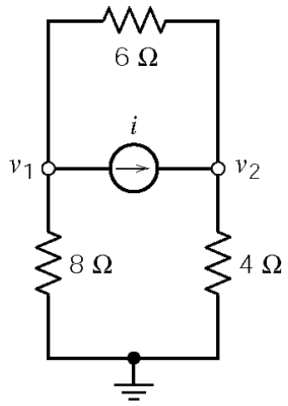

Figure 1: Schematic for Problem #1.

Problem #2

- Use NVA to solve for v_1, v_2 and v_3 in the circuit shown in Fig. 2.

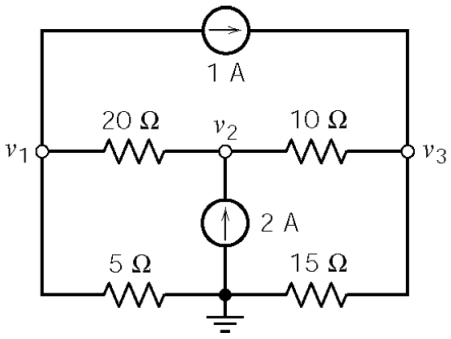

Figure 2: Schematic for Problem #2.

Problem #3

- Use NVA to find v_a, v_b and v_c of the circuit shown in Fig. 3. Determine the voltage potential v_c across the 8 [Ω] resistor.

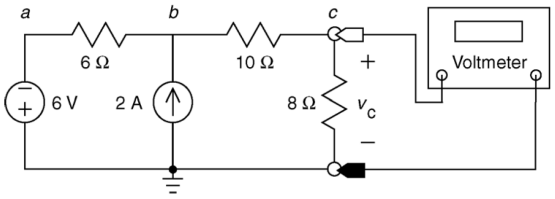

Figure 3: Schematic for Problem #3.

Problem #4

- Use NVA to find the voltage drop v_a across the 100 [Ω] resistor the circuit shown in Fig. 4. Hint: the supernode is highlighted in blue.

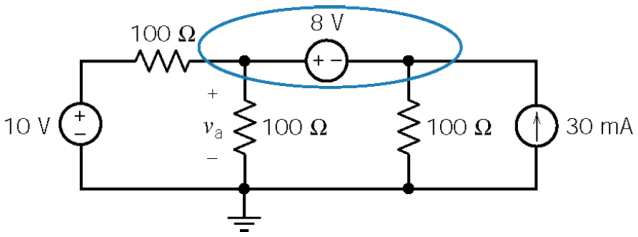

Figure 4: Schematic for Problem #4.

Problem #5

- Use NVA to find i_1, i_2 and the gain of the CCCS in the circuit shown in Fig. 5.

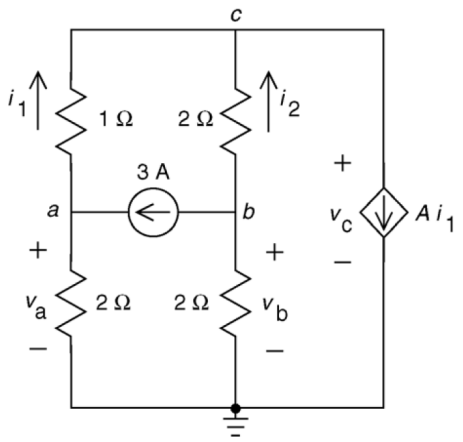

Figure 5: Schematic for Problem #5.

Problem #6

- Use NVA to find i_x in the circuit shown in Fig. 6.

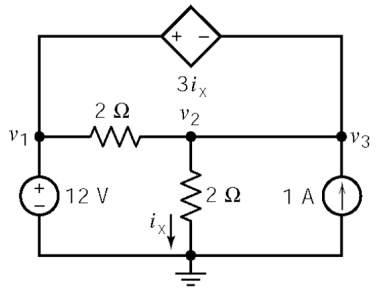

Figure 6: Schematic for Problem #6.