

Problem 1-3B: The new circuit in Figure 1-3B has 4 elements. Calculate the numerical value for the current i_B and the power dissipated in the 3 ohm resistor. [Use Constitutive and Current Laws and nodes, note: $i_B \neq i_A$ in Problem 1-3A.]

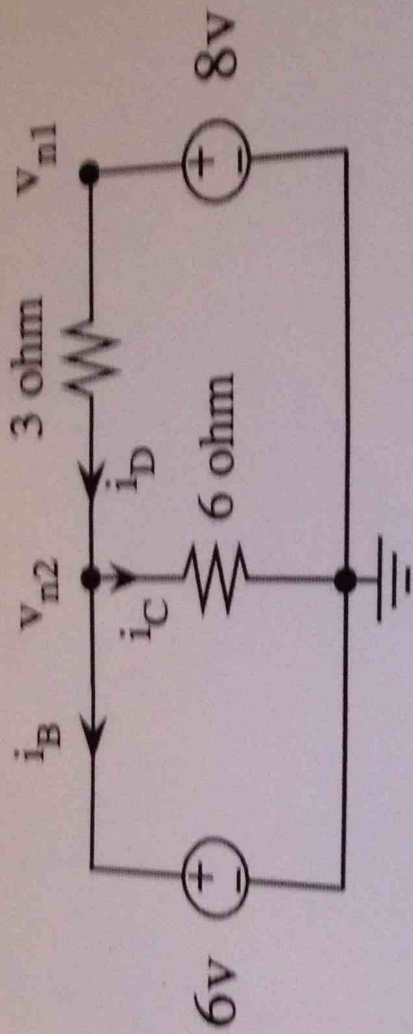
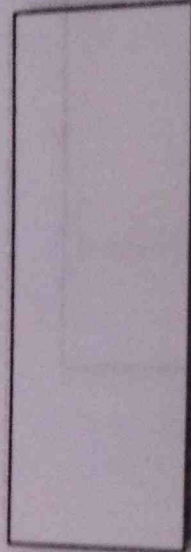


Figure 1-3B



Problem 1-4: Calculate the values for currents: i_A and for i_B in their respective circuits depicted in Figure 1-4A (with 3 nodes: n1, n2, and n3); and in Figure 1-4B (with 4 nodes: n1, n2, n3, and n4), give units. [Take Care: What can you say about nodes n1 and n3? Does it help to 're-draw' the circuits in a more simplified arrangement?]

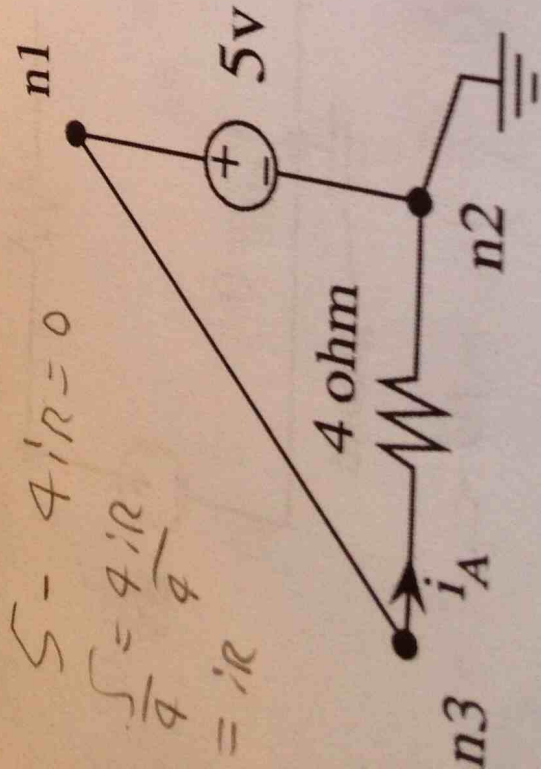


Figure 1-4A

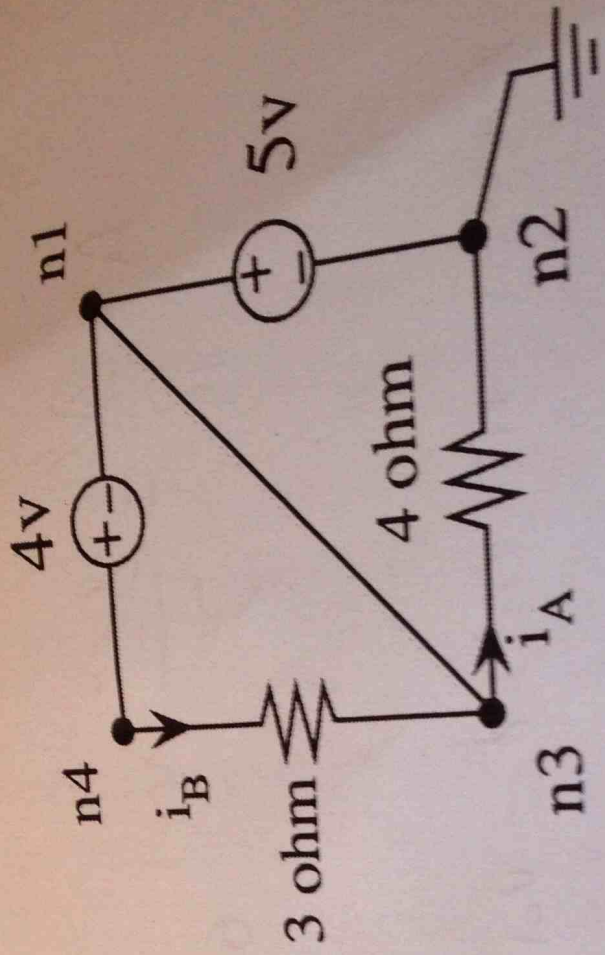


Figure 1-4B

$$5 - 4i_A = 0$$

$$5 = 4i_A$$

$$i_A = \frac{5}{4} = 1.25 \text{ A}$$

$$i_A = \frac{5}{4} \text{ amperes}$$

$$(V_{n1} - V_{n2}) - i_A R$$

Bonus Problem 1-5: Calculate the voltage value for v_{out} at the 'observation terminals' on the 8k resistor in the circuit depicted in Figure 1-5; and calculate the power dissipated in the 8k resistor. Watch for give units. [Note there are 4 branches with known given values with known given values for their currents.

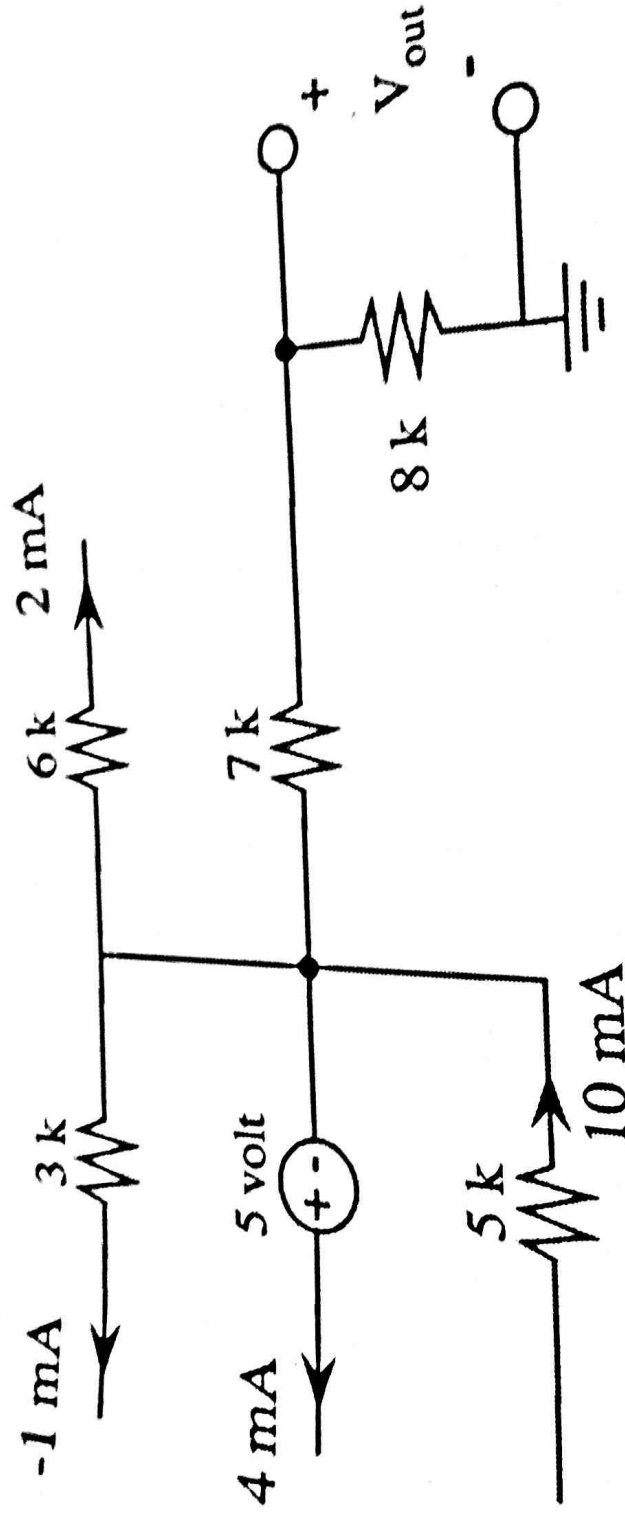


Figure 1-5A