H.W. #10 EE 220 Fall 2020

Show your work for credit!

1. The first two circuits from HW#9 are reproduced below. For each circuit calculate the power dissipated by each resistor and the power supplied by each source. No need to repeat finding the currents and voltages from problem 1 in HW#9. Simply list, and use, the results from HW#9 problem 1 in this one. Does the power dissipated by the resistors equal the power supplied by the sources? Do not turn in LTspice results (if you do I will ask the grader to take points off for not following the directions) but feel free to use LTspice to ensure that you did the problem right. (2 points)
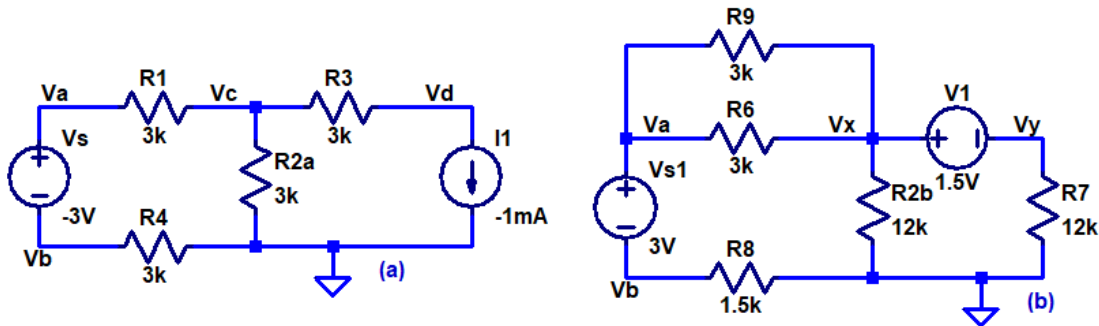
2. Find the Thevenin and Norton equivalent circuits (models) at the terminals where R2 is connected (without R2 in the circuit) in the above two circuits. Use LTspice, with R2 back in the circuit and connected to your Thevenin and Norton equivalent circuits, to verify your models are correct. (4 points)

3. Can Thevenin and Norton equivalent circuits be determined for circuits with dependent sources? Why or why not? Using the (a) and (c) circuits from problem 2 in HW#9, pasted below, verify your answer. Assume that you are finding Thevenin and Norton equivalent circuits between Vout and ground, without R4 in the circuit. Verify your answer with LTspice simulations by connecting R4 to your Thevenin/Norton circuits and showing the same output voltage, Vout. (6 points)