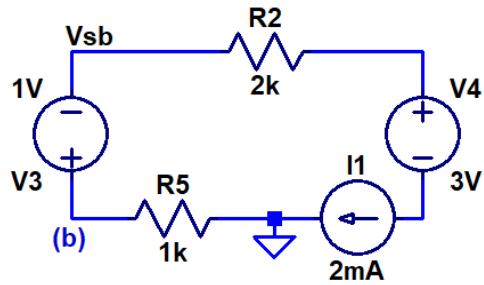
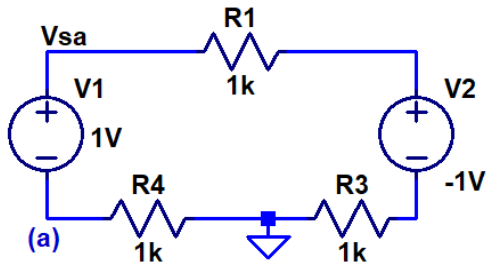


Practice Midterm Exam – EE 221 Circuits II  
University of Nevada, Las Vegas

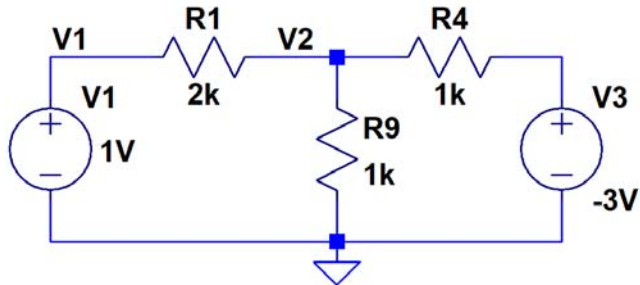
NAME: \_\_\_\_\_

Closed book and notes. No extra paper, do your work on this exam, use the back if needed.  
**Show your work for credit and be neat!**

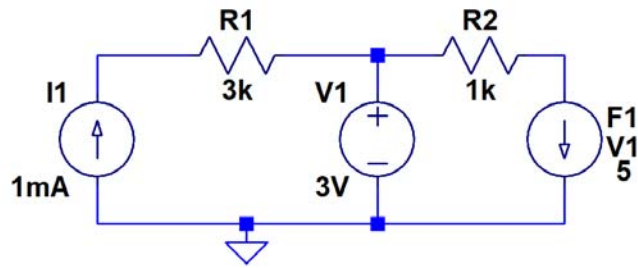
1. Find  $V_{sa}$  and  $V_{sb}$  in the following circuits. (10 points)



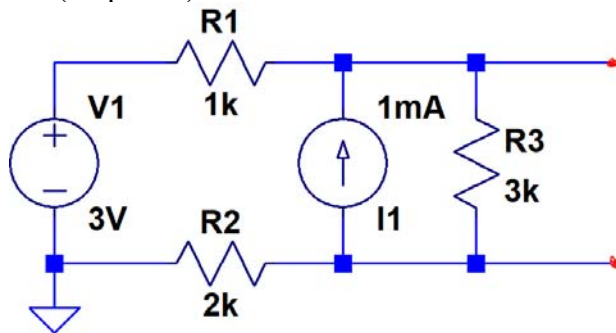
2. Find  $V_1$  and  $V_2$  in the following circuit **using mesh analysis**. (10 points)



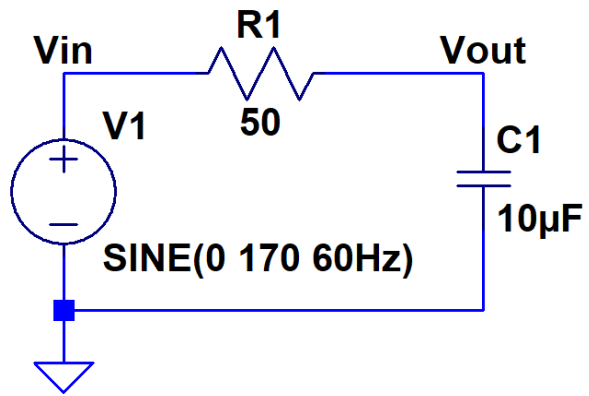
3. Find the current through V1. (10 points)



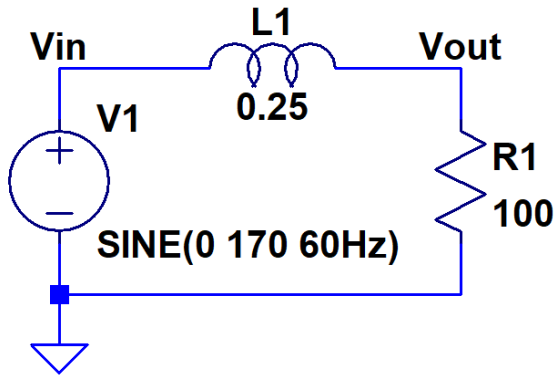
4. Find the Thevenin equivalent of the following circuit at the port indicated by the red dots. (10 points)



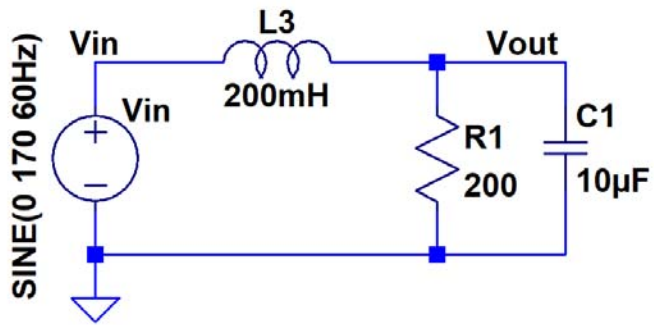
5. Find the AC current (write an equation) flowing in the following circuit. (10 points)



6. Find  $V_{out}$  in the following circuit and sketch on the same plot with  $V_{in}$ , showing the phase shift and magnitude. (15 points)



7. Find  $V_{out}$  in the following circuit and sketch in the time-domain, along with  $V_{in}$ , showing the phase shift and magnitude. (20 points)



8. Determine, and sketch, the frequency response (both magnitude and phase) of the circuit in problem 6. From your plots what are the magnitude and phase shifts at 60 Hz? How do these compare to the answers you got in problem 6? (15 points)