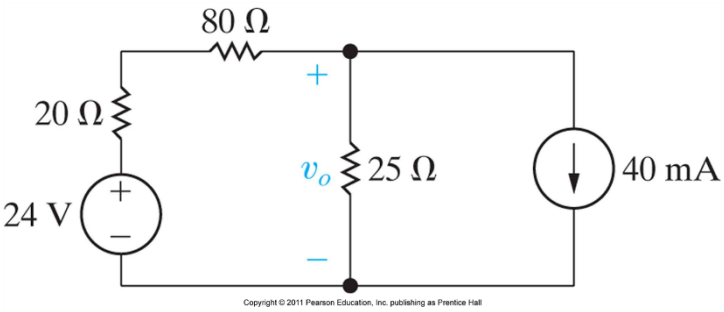
EE 201 – CIRCUIT THEORY I
Homework #2
(Due: 16.11.2026 in Midterm)

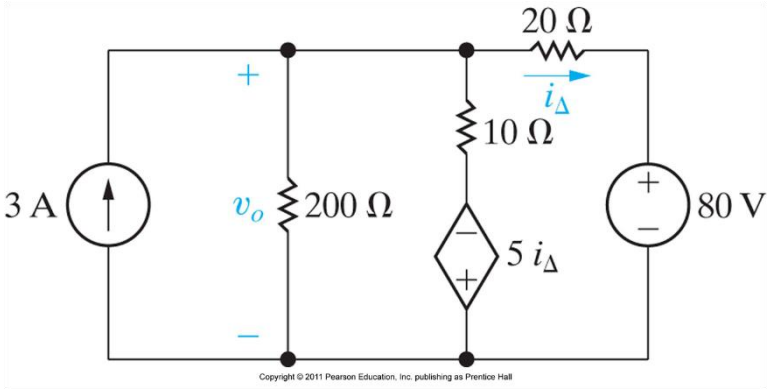
1. A 50 Ω resistor is connected in series with the 40 mA current source in the circuit in figure below.

a) Find v_0.
b) Find the power developed by the 40 mA current source.
c) Find the power developed by the 24 V voltage source.
d) Verify that the total power developed equals to the total power dissipated.
e) What effect will any finite resistance connected in series with the 40 mA current source have on the value of v_0.



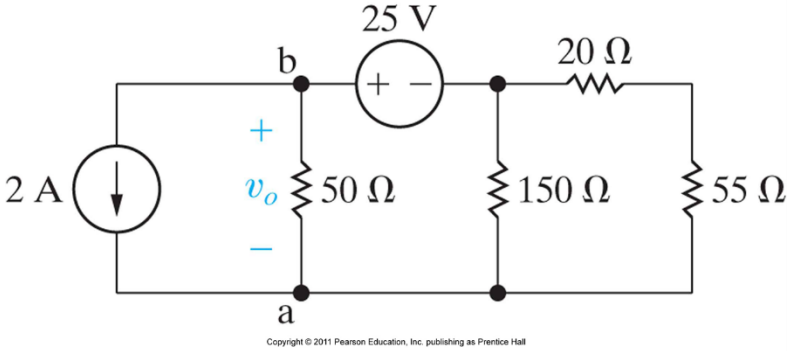
2. In the circuit below.

a) Use the node-voltage method to find v_0.
b) Find the power absorbed by the dependent source.
c) Find the total power developed by the independent source.



3. In the circuit below.

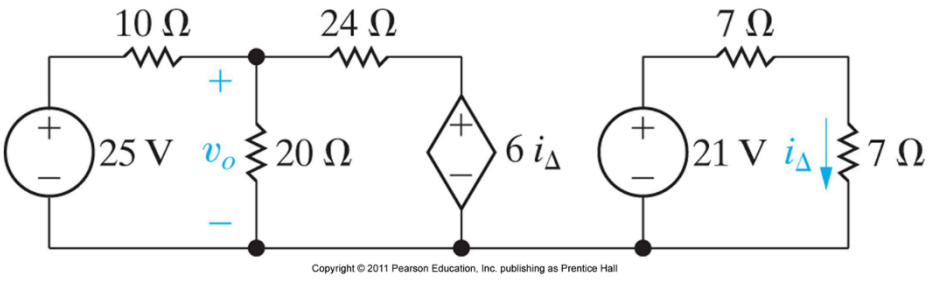
a) Use the node-voltage method to find v_0 and the power delivered by the 2A current source. Use **node a** as the reference node.
b) Repeat part (a) by using **node b** as the reference node.
c) Compare the choice of the reference node in (a) and (b). Which is better, and why?



4) In the circuit below.

a) Use the mesh-current method to find v_0.

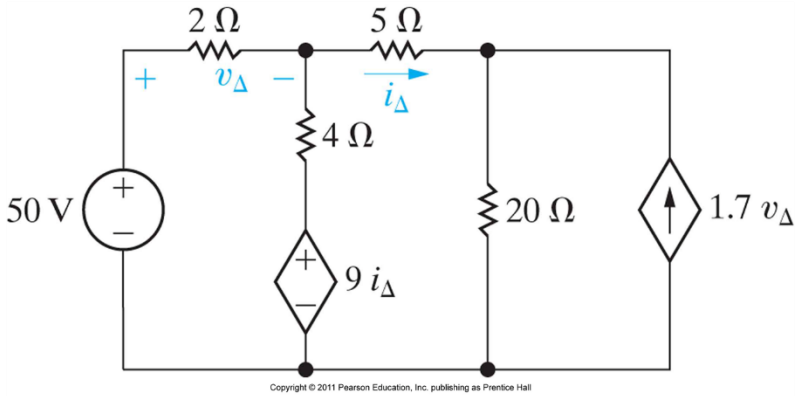
b) Find the power delivered by the dependent source.



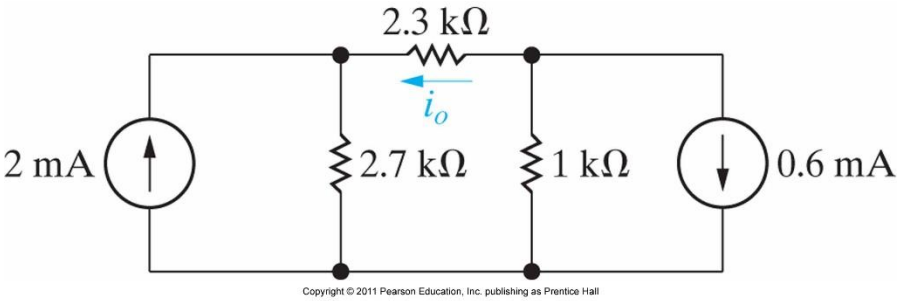
5) In the circuit below.

a) Use the mesh-current method to determine which sources are generating power.

b) Find the total power dissipated.



6) Use a series of source transformations to find the current i_0 then verify your solution by using one of the any other methods in circuit given below.



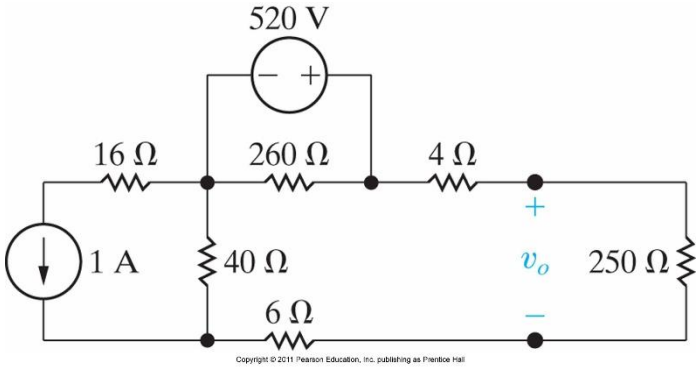
7) For the given circuit below,

a) Use source transformation to find the v_0 voltage

b) Find the power developed by the 520 V source.

c) Find the power developed by the 1 A source.

d) Verify that the total power developed equals the total power dissipated.

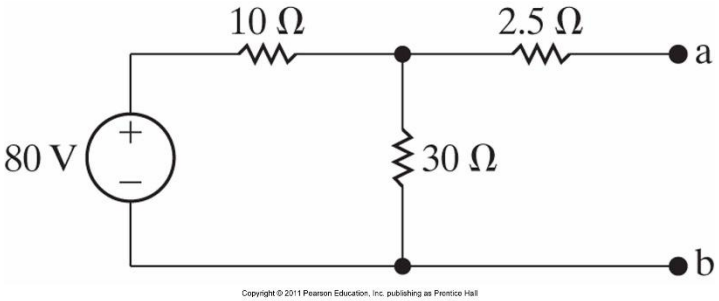


8) For the given circuit below,

a) Find the Thevenin equivalent circuit with respect to the terminals a, b.

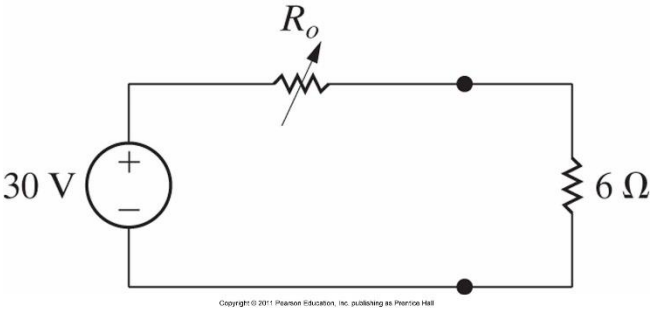
b) Find the Norton equivalent circuit with respect to the terminals a, b.

c) Verify the results found in part a and b using source transformation.

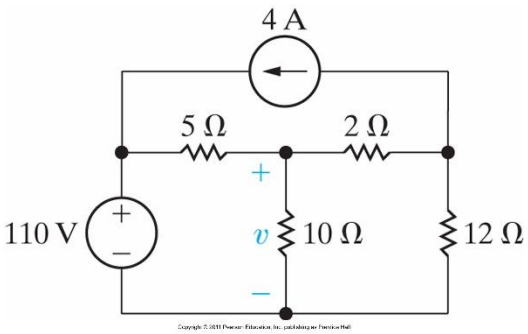


9) a) Find the value of the variable resistor R_0 in the circuit below that will result in maximum power dissipation in the 6 Ω resistor.

b) What is the maximum power delivered to the 6 Ω resistor.



10) Use the principle of superposition to find the voltage v in the circuit given below. Find the power dissipated in the 10 Ω resistor.



- They give idea about the exams.
- It is advised to you solving that questions before the exams by yourselves.