

Second Partial Integrator Exam

TE1002 Circuits 1

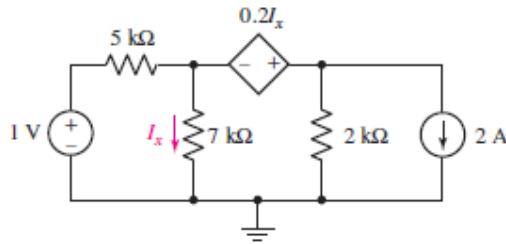
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Tecnológico de Monterrey

Name _____

Problem 1 (15 points)

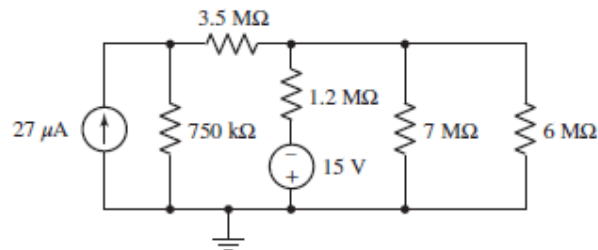
Employ superposition principles to obtain a value for the current I_x as labeled in Fig. 5.56.



■ FIGURE 5.56

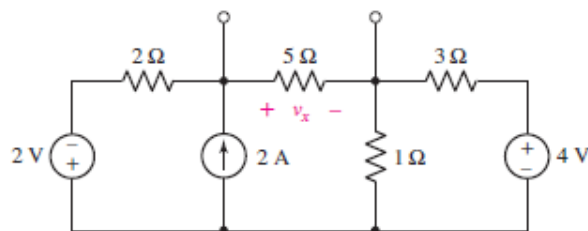
Problem 2 (15 points)

(a) Using repeated source transformations, reduce the circuit of Fig. 5.62 to a voltage source in series with a resistor, both of which are in series with the $6 \text{ M}\Omega$ resistor. (b) Calculate the power dissipated by the $6 \text{ M}\Omega$ resistor using your simplified circuit.



■ FIGURE 5.62

Problem 3 (20 points)

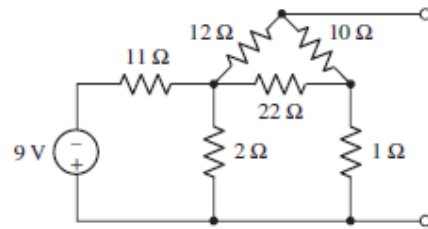


■ FIGURE 5.74

(a) Determine the Norton equivalent of the circuit depicted in Fig. 5.74 as seen looking into the two open terminals. (b) Compute power dissipated in a 5Ω resistor connected in parallel with the existing 5Ω resistor. (c) Compute the current flowing through a short circuit connecting the two terminals.

Problem 4 (20 points)

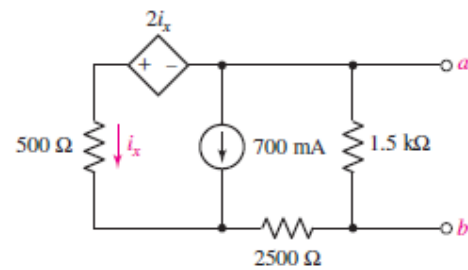
(a) Determine the two-component Thévenin equivalent of the network in Fig. 5.102. (b) Calculate the power dissipated by a $1\ \Omega$ resistor connected between the open terminals.



■ FIGURE 5.102

Problem 5 (10 points)

Determine the Norton equivalent of the circuit drawn in Fig. 5.81 as seen by terminals a and b . (There should be no dependent sources in your answer.)



■ FIGURE 5.81