

Block A: Unit 3

Q1. Problem 3.51

Find the Thevenin equivalent circuit as seen by the $3\text{-}\Omega$ resistor for the circuit of Figure P3.51.

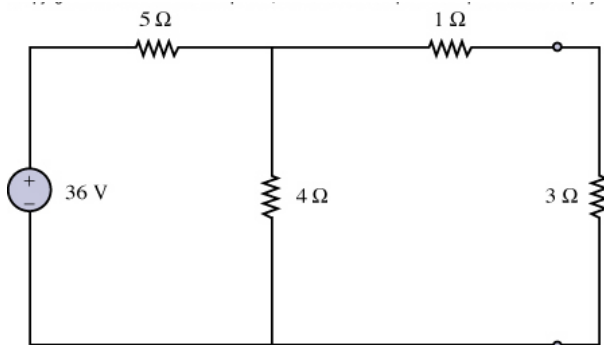


Figure P3.51

Q2. Problem 3.52

Find the Thevenin equivalent circuit as seen by the $3\text{-}\Omega$ resistor in Figure P3.52

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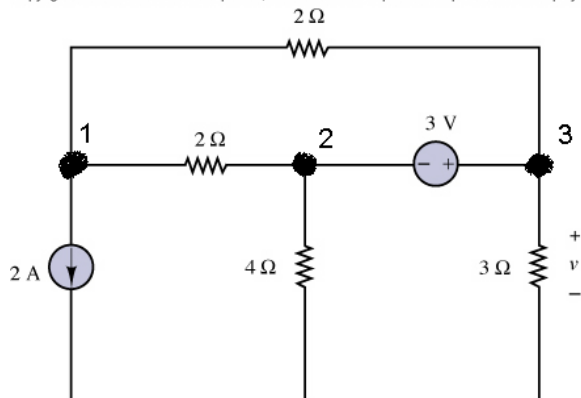


Figure P3.52

Q3. Problem 3.54

Find the Norton equivalent circuit to the left of the terminals a and b

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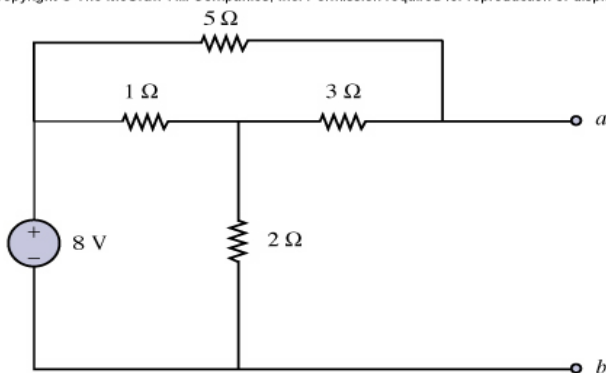


Figure P3.54

Q4. Problem 3.53

Find the Norton equivalent of the circuit to the left of the $2\text{-}\Omega$ resistor in the Figure P3.53.

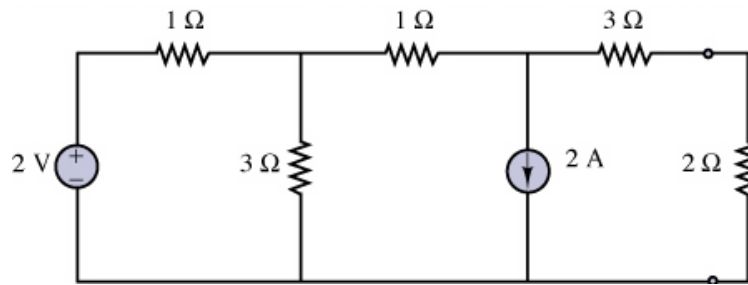


Figure P3.53

Q5. Problem 3.55

Find the Thevenin equivalent resistance seen by the load resistor R_L in the circuit of Figure P3.56.

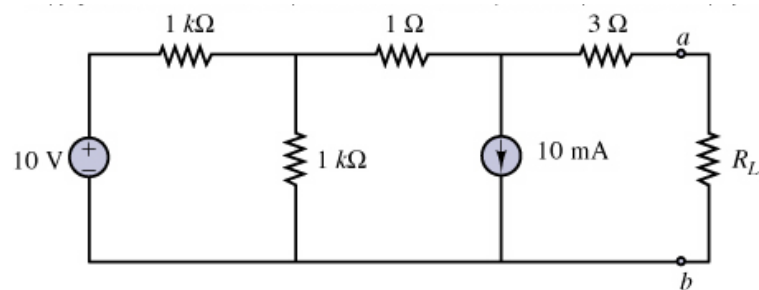


Figure P3.56

Q6. Problem 3.66

Find the Thevenin resistance as seen by the 10Ω resistor. Compute the Thevenin voltage and Norton current when the 10Ω resistor is the load.

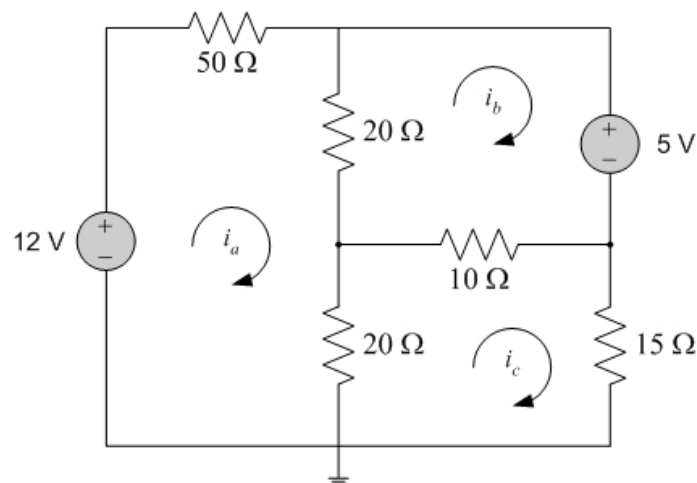


Figure P3.66

Q7. Problem 3.62

Find the Thevenin equivalent resistance seen by resistor R_3 in circuit of Figure P3.5. Hence then compute the Thevenin (open-circuit) voltage and Norton (short-circuit) current when R_3 is the load. Assume all resistors in the circuit are 100Ω and voltage sources are 5V .

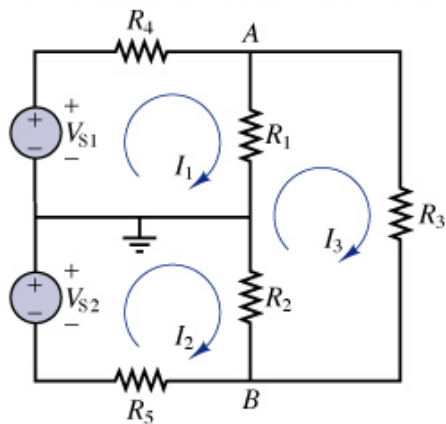


Figure P3.5

Q8. [Problem 19.1 of Alexander & Sadiku]

Obtain the z parameters for the network in Figure 19.65

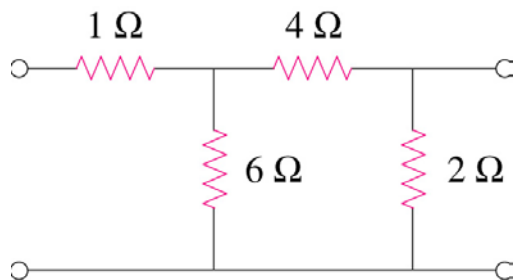


Figure 19.65

Q9. [Problem 19.7 of Alexander & Sadiku]

Obtain the z parameters for the circuit in Figure 19.71

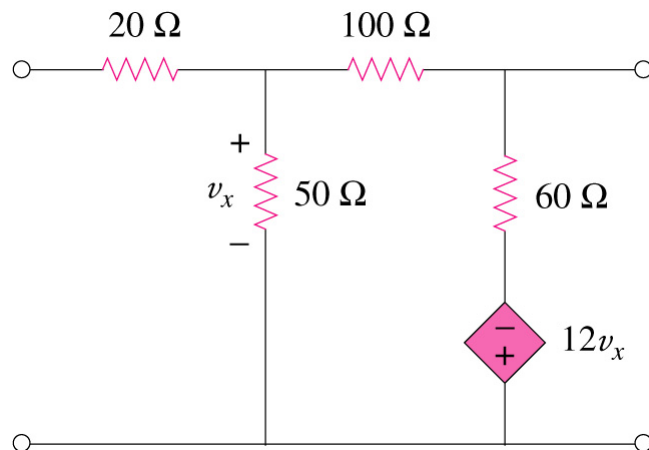


Figure 19.71

Q10. [Problem 19.7 of Alexander & Sadiku]

Obtain the h parameters for the networks in Figure 19.87

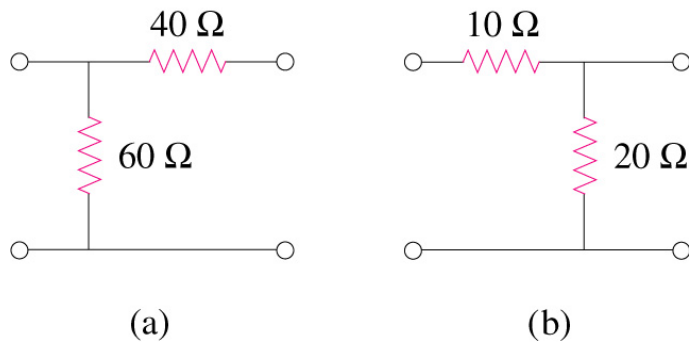


Figure 19.87

Q11. [Problem 19.7 of Alexander & Sadiku]

Determine the h parameters for the network in Figure 19.88

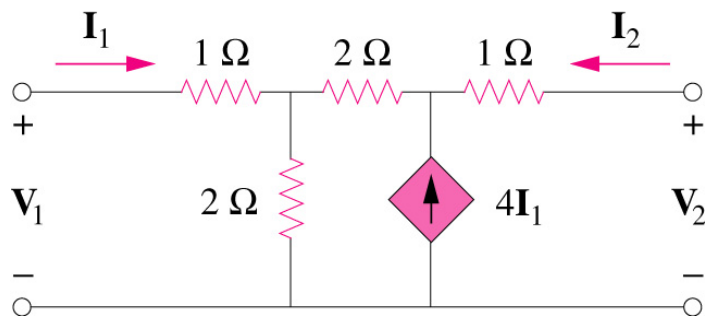


Figure 19.88

Numerical solutions**Q1. [Problem 3.51]**3.222 Ω , 16V**Q2. [Problem 3.52]**4 Ω , -2.14V**Q3. [Problem 3.54]**2.12 Ω , 3.05A**Q4. [Problem 3.53]**4.75 Ω , -0.42A**Q5. [Problem 3.55]**504 Ω , -0.01V**Q6. [Problem 3.66]**12.24 Ω , 2.44V, 198.8A**Q7. [Problem 3.62]** $R_{th} = 100\Omega$, $V_{th} = 5V$, $I_n = 50mA$ **Q8. [Problem 19.1 of Alexander & Sadiku]**

$$\begin{bmatrix} 4 & 1 \\ 1 & 1.714 \end{bmatrix} \Omega$$

Q9. [Problem 19.7 of Alexander & Sadiku]

$$\begin{bmatrix} 29.88 & 3.704 \\ -70.37 & 11.11 \end{bmatrix} \Omega$$

Q10. [Problem 19.30 of Alexander & Sadiku]

$$(a) \begin{bmatrix} 24\Omega & 0.6 \\ -0.6 & 0.01S \end{bmatrix} \quad (b) \begin{bmatrix} 10\Omega & 1 \\ -1 & 0.05S \end{bmatrix}$$

Q11. [Problem 19.31 of Alexander & Sadiku]

$$\begin{bmatrix} 38\Omega & 0.4 \\ -3.6 & 0.2S \end{bmatrix}$$