3.53 Use a Δ-to-Y transformation to find the voltages \( v_1 \) and \( v_2 \) in the circuit in Fig. P3.53.

![Figure P3.53](image1)

3.56
a) Find the equivalent resistance \( R_{ab} \) in the circuit in Fig. P3.56 by using a Δ-to-Y transformation involving the resistors \( R_2, R_3, \) and \( R_4 \).

b) Repeat (a) using a Y-to-Δ transformation involving resistors \( R_2, R_4, \) and \( R_5 \).

c) Give two additional Δ-to-Y or Y-to-Δ transformations that could be used to find \( R_{ab} \).

![Figure P3.56](image2)

3.61 In the circuit in Fig. P3.61(a) the device labeled D represents a component that has the equivalent circuit shown in Fig. P3.61(b). The labels on the terminals of D show how the device is connected to the circuit. Find \( v_x \) and the power absorbed by the device.

![Figure P3.61](image3)
4.8 Use the node-voltage method to find $v_1$ and $v_2$ in the circuit shown in Fig. P4.8.

![Figure P4.8](image)

4.13 a) Use the node-voltage method to find the branch currents $i_a - i_b$ in the circuit shown in Fig. P4.13.

b) Find the total power developed in the circuit.

![Figure P4.13](image)

4.17 a) Use the node-voltage method to find the total power developed in the circuit in Fig. P4.17.

b) Check your answer by finding the total power absorbed in the circuit.

![Figure P4.17](image)
4.24 Use the node-voltage method to find the value of $v_o$ in the circuit in Fig. P4.24.

Figure P4.24

4.27 Use the node-voltage method to find $v_o$ in the circuit in Fig. P4.27.

Figure P4.27