

1

1.28

✓ Answer ✓

Power supplies:

- 1 - 120 W
- 5 - 8 W

Power sinks:

- 2 - 30 W
- 3 - 8 W
- 4 - 48 W
- 6 - 30 W
- 7 - 12 W

1.39

✓ Answer

$$15v = 5I_x$$

$$I_x = 3 A$$

$$V = 2I_x$$

$$V = 6 A$$

2.11

✓ Answer

$$\frac{9V}{500\Omega} = 6 mA + 3I_0$$

$$I_0 = 4 mA$$

$$I_0(500 + R) = 12 V$$

$$\frac{12}{I_0} - 500 = R$$

$$R = 2500\Omega$$

2.19

✓ Answer

$$10 = 2I_x + 4(I_x - I_y)$$

$$4I_x = 4(I_y - I_x) + 6I_y$$

$$4I_x = 5I_y$$

$$5 + 2I_y = 3I_x$$

$$25 + 8I_x = 15I_x$$

$$25 = 7I_x$$

$$\frac{25}{7} = I_x$$

$$\frac{20}{7} = I_y$$

2.46

✓ Answer

The circuit reduces to a single loop with only one 12Ω resistor, with no power sources. Thus, there is no current.

$$\begin{bmatrix} 10 & -3 \\ -3 & 9 \end{bmatrix} = \begin{bmatrix} I_0 \\ I_1 \end{bmatrix} = \begin{bmatrix} 10 \\ -30 \end{bmatrix}$$

$$I_0 = 0$$