The resistance R_1 is a variable resistor that can take on values in the range $0 \le R_1 \le 24\Omega$.

1. Find the value of $R_1 = R_{1a}$ that maximizes current i_1 and the resulting current $i_1 = i_{1a}$.

2. Find the value of $R_1 = R_{1b}$ that maximizes voltage v_1 and the resulting current $v_1 = v_{1b}$.

3. Find the value of $R_1 = R_{1c}$ that maximizes the power received by R_1 and the resulting power P_{1c}.
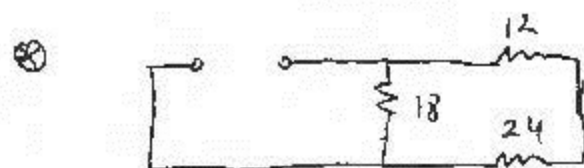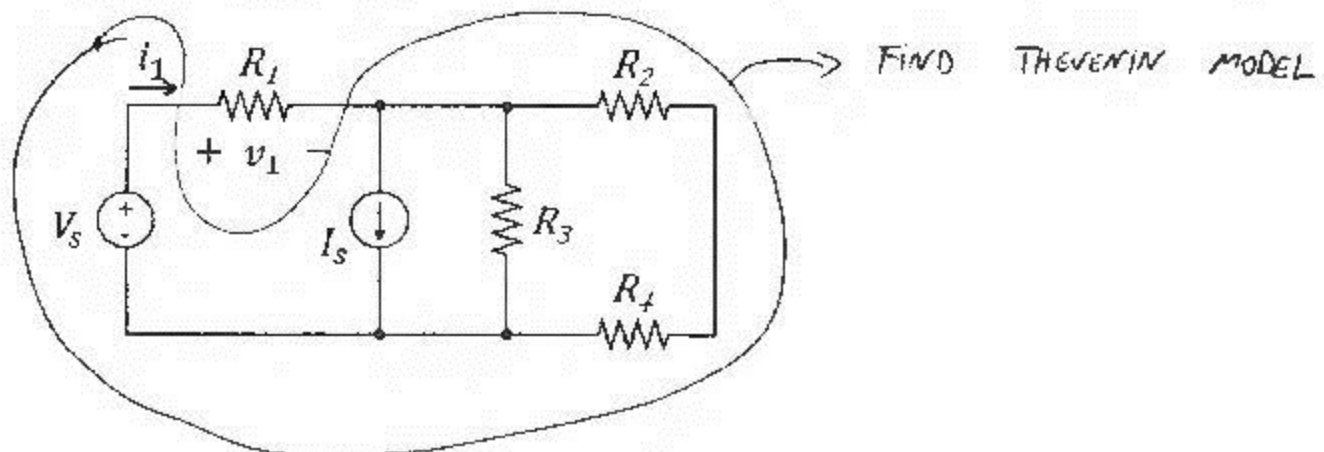
Vs = 12 V

Is = 3 A

R2 = 12 ohm

R3 = 18 ohm
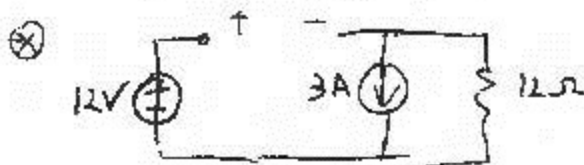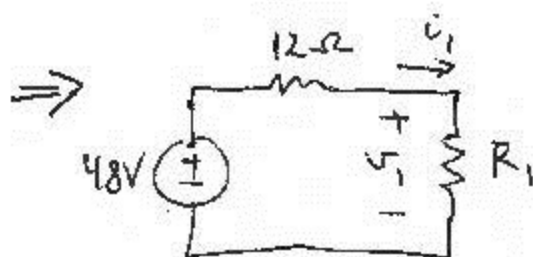
R4 = 24 ohm

$\Rightarrow$ FIND THEVENIN MODEL

$\Rightarrow \quad R_{TH} = 18 \,//\, (12+24) = \left(\frac{1}{18}+\frac{1}{36}\right)^{-1}$

$= \left(\frac{3}{36}\right)^{-1} = 12\,\Omega$

SOURCE TRANSFORM $\rightsquigarrow$
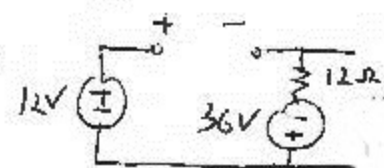
$V_{oc} = 48V$

① $\boxed{R_1 = 0}$ $\quad i_1 = \frac{48}{12} = 4 \quad \Rightarrow \quad \boxed{i_1 = 4A}$

② $\boxed{R_1 = 24\,\Omega}$ $\quad v_1 = 48 \cdot \frac{24}{24+12} = 48 \cdot \frac{2}{3} = 32$

$\boxed{v_1 = 32\,V}$

③ $R_1 = R_{TH} \Rightarrow \boxed{R_1 = 12\,\Omega}$

$i = \frac{48}{24} = 2A \quad \Rightarrow \quad P = i^2 R = 4 \cdot 12$

$\boxed{P = 48w}$