1) Find the voltage across the resistance \( V_R \)
All resistors are 10\( \Omega \).

\[
\begin{align*}
\text{(a)} & \quad + \frac{1}{2}A & \quad \text{\( V_R \)} & \quad + \frac{3A}{2} \quad \text{\( \frac{-V_R}{3} \)} & \quad \text{\( \frac{-V_R}{3} \)} & \quad \text{(b)} \quad -3A \quad \text{\( \frac{-V_R}{3} \)} & \quad 5A \quad \text{\( \frac{-V_R}{3} \)} & \quad \text{\( \frac{-4A}{3} \)} & \quad \text{(c)} \quad \text{(d)}
\end{align*}
\]

2) Find the current through the resistance \( i_R \)
All resistors are 5\( \Omega \).

\[
\begin{align*}
\text{(a)} & \quad + \frac{1}{2}i_R & \quad \text{\( 2V \)} & \quad -3V & \quad + \frac{1}{4}i_R & \quad + \frac{1}{5}i_R & \quad \text{(b)} \quad \text{\( -3V \)} & \quad 4V \quad \text{\( \frac{-V_R}{3} \)} & \quad \text{(c)} \quad \text{(d)}
\end{align*}
\]

3) Find the power dissipation \( P_{\text{diss},R} \) in each resistor of Problem 1.

4) Find the power dissipation \( P_{\text{diss},R} \) in each resistor of Problem 2.

5) If a 25\( \Omega \) resistor dissipates 18 W of power:
(a) determine its voltages \( V_R \),
(b) determine its currents \( i_R \),
(c) determine how many \( (V_R, i_R) \) combinations from (a) & (b) are valid.
A circuit with four elements labeled A, B, C, D is shown. Write the algebraic relation of voltages with polarities as shown.

A cutaway portion of a circuit with elements A, B, C, D is shown. Find the algebraic relationship for the currents with directions shown.

\[ i_A = 5 \text{A} \]
\[ v_A = 20 \text{V} \]
\[ v_B = \_ \text{V} \]
\[ v_D = \_ \text{V} \]
\[ v_E = 2 \text{A} \]
\[ v_E = 8 \text{V} \]

\[ v_B, v_D \]
\[ i_B, i_C, i_D \]

Determine \( v_B, v_D \) and \( i_B, i_C, i_D \) voltages and currents.

If \( I_2 = 2 \text{A} \), find \( V_s \)

If \( V_2 = 18 \text{V} \), find \( I_s \)