Problem 4.1: The nonlinear element in the circuit below has the $i$-$v$ characteristics shown in the graph.

(A) Estimate values of the voltage $v$ across and the current $i$ through the element.

(B) Assume the nonlinear device is connected upside down as shown below. What are the values of $v$ and $i$ in this case?
Problem 4.2: The circuit below contains a single nonlinear element whose $i$-$v$ characteristic is indicated.

\[ i = \begin{cases} 
  kv^3 & \text{if } v > 0 \\
  0 & \text{if } v < 0 
\end{cases} \]

\[ k = \frac{1 \text{ mA}}{(\text{volt})^3} \]

(A) Determine the voltage $v$ and the current $i$.

(B) Determine the voltage $v_S$ across the current source.

Hint: Think about Thevenin and/or Norton equivalent circuits.