1. You have a 12 V, a 4 V, and a 9 V battery. You need to apply 7 V to a circuit. Can you do it with the batteries you have? How? (use words and/or drawings).

2. You are given an unknown element (see below) with the following I-V relationship: \( i(v) = 3v - 6 \). Is the element linear? Is it active or passive? Explain your answer. (Hint – plot the \( i-v \) curve.)

3. For the following two circuits, solve for the required voltage or current using \textbf{any two} methods you like OR by using nodal or mesh analysis and solving for power delivered/absorbed by each element. Show that your answers match with reasonable round off error. Do not attempt only one method or you will get zero credit.

Find \( I_0 \). (Best methods are mesh and superposition)

Find \( V_o \). (Best methods are Thevenin’s and mesh)