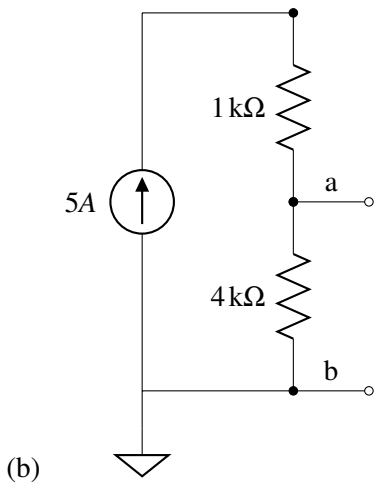
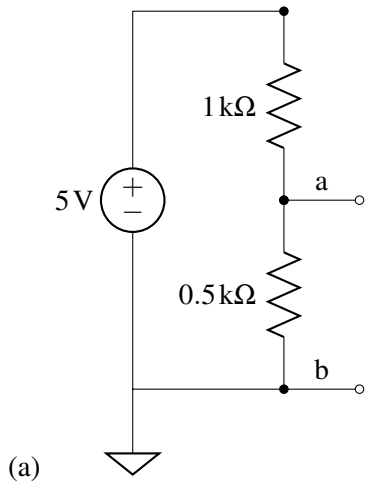
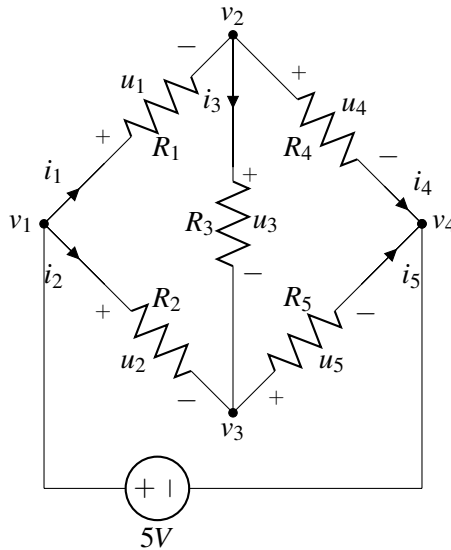


1. **Equivalence** Find the Thévenin and Norton equivalents across terminals a and b for the circuits given below.



- 2. Wheatstone Bridge** Let us revisit our favorite circuit, the wheatstone bridge. Thévenin equivalence is an alternate technique we can use to solve the bridge circuit. For the circuit below, $R_1 = 4k\Omega$, $R_2 = 1k\Omega$, $R_3 = 3k\Omega$, $R_4 = 1k\Omega$, and $R_5 = 4k\Omega$.



- (a) First, let's for a moment remove the bridge resistor. Calculate the Thévenin equivalence between the two terminals of the resistor v_2 and v_3 .
- (b) With this equivalent circuit, calculate the current through the bridge resistor.
- 3. Equivalence** Find the Thévenin and Norton equivalents of the following circuit across the terminals a and b (in terms of V_s and β). Note that the current source is dependent on the current I_x .

