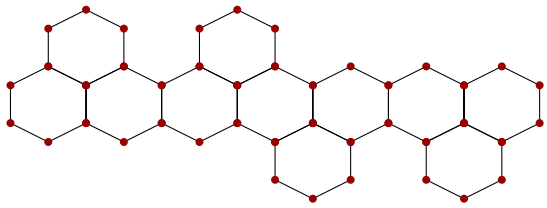
HW 11

Due: Fri, 21 Apr 2023

1. **Problem 3.1.11.** Let C and C' be cycles in a graph G. Prove that $C \Delta C'$ decomposes into cycles.

2. **Problem 3.1.28.** (!) Exhibit a perfect matching in the graph below or give a short proof that it has none. (Lovász-Plummer (1986, p7])



3. **Problem 4.1.1.** (−) Give a proof or a counterexample for each statement below.

   (a) Every graph with connectivity 4 is 2-connected.
   (b) Every 3-connected graph has connectivity 3.
   (c) Every k-connected graph is k-edge-connected.
   (d) Every k-edge-connected graph is k-connected.

Don't turn in, but take a look at:

4. **Problem 4.1.8.** Determine $\kappa(G)$, $\kappa'(G)$, and $\delta(G)$ for each graph G drawn below.