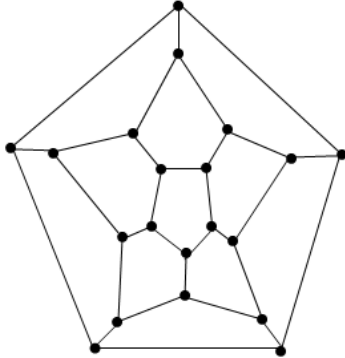
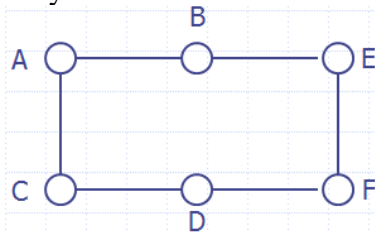


Lab 12
Due Tuesday 2 pm

1. Does the following graph have a Hamiltonian cycle? If so, draw a spanning cycle.



2. Illustrate the proof that the HamiltonianCycle problem is polynomial reducible to TSP by considering the following Hamiltonian graph—an instance of HamiltonianCycle—and transforming it to a TSP instance in polynomial time so that a solution to the HC problem yields a solution to the TSP problem, and conversely.



3. Show that TSP is NP-complete. (Hint: use the relationship between TSP and HamiltonianCycle discussed in the slides. You may assume that the HamiltonianCycle problem is NP-complete.)
4. Show that the worst case for VertexCoverApprox can happen by giving an example of a graph G which has these properties:
- G has a smallest vertex cover of size s
 - VertexCoverApprox outputs size $2*s$ as its approximation to optimal size.