Due by 1559 AST Friday, February 11, 2011 — Show your work

1. Give all (unlabelled) graphs on 6 vertices that have walks that are Euler circuits and Hamiltonian circuits at the same.

2. How many edges are there in $K_{100}$?

3. Find a graph that is bipartite and connected whose complement is also bipartite and connected.

4. Find a connected graph with 6 vertices such that every vertex has degree at least two and the graph has no Hamiltonian circuit.

5. For (i) $K_5$ and (ii) $K_6$ determine how many

   (a) Hamiltonian circuits are there?

   (b) Euler circuits are there?

6. Draw a connected simple graph with degree sequence $(4, 4, 4, 4, 4, 4, 4, 4)$ and find an Euler circuit in that graph.