Exam #3 topics & sample questions

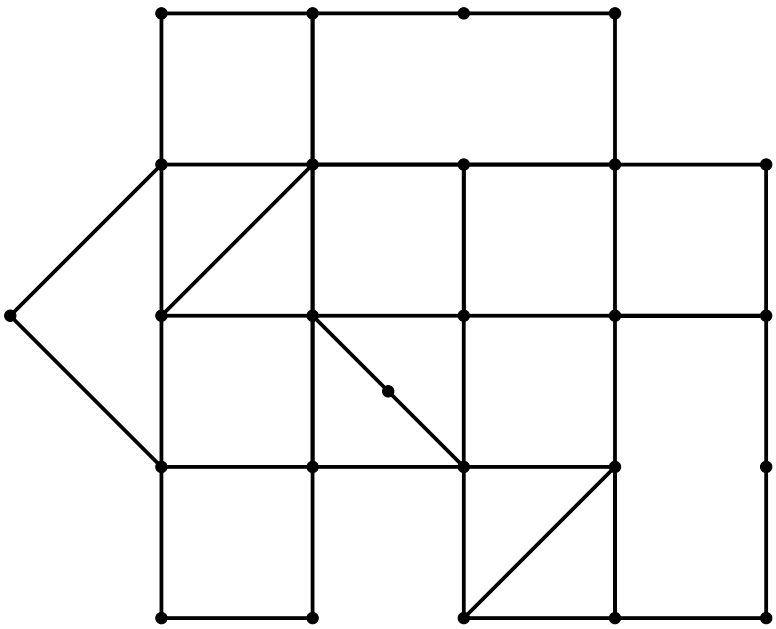
Euler & minimum duplication circuits

Make sure your paths are readable!

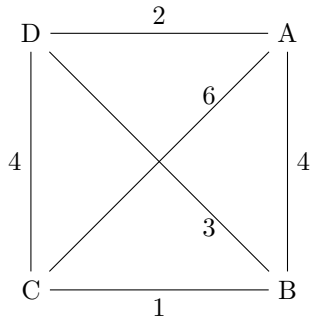
1. For each of the graphs on the other page, find an Euler circuit, or say if none exists.
2. For each of the graphs on the other page, find an Euler path, or say if none exists.
3. For each of the graphs on the other page, find a minimum duplication circuit (some may require no duplications).
4. For each of the graphs on the other page, find a minimum duplication path (some may require no duplications).

Hamilton circuits & traveling salesman problem

5. For each of the graphs on the other page, find a Hamilton circuit, or say if none exists.
6. Redraw the diamond-shaped graph on the other page, and indicate which edges, if any, must be used in any Hamilton circuit, and which cannot be used in any Hamilton circuit. (You should not try to draw in a complete Hamilton circuit- only indicate edges which *must* be used, or *cannot* be used.)
7. Find a Hamilton circuit in this graph: there is only one correct answer, and you should be able to find it without any guessing.



8. For this weighted complete graph:

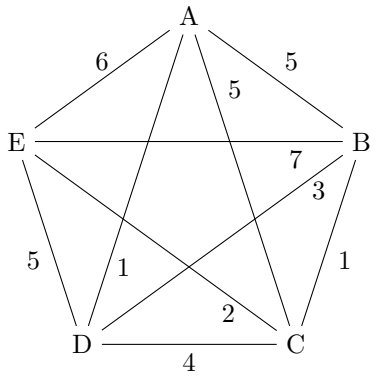


i) Find the Hamilton circuit of minimal weight.

ii) Find a good Hamilton circuit using the repeated nearest neighbor algorithm.

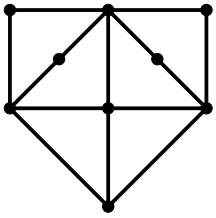
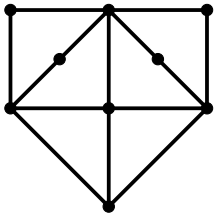
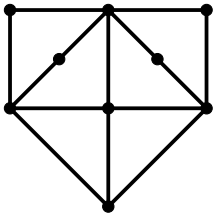
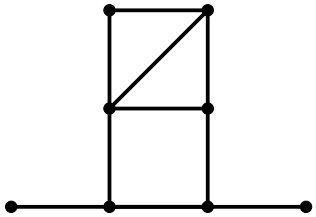
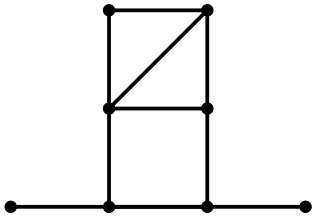
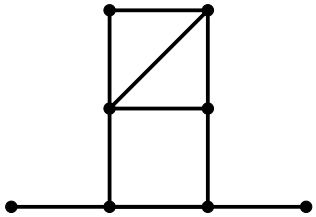
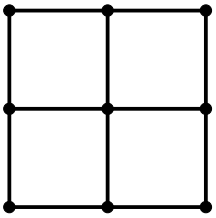
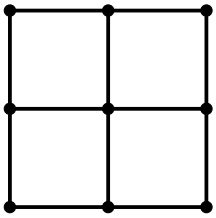
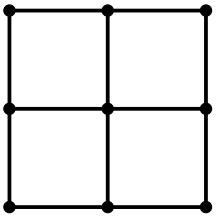
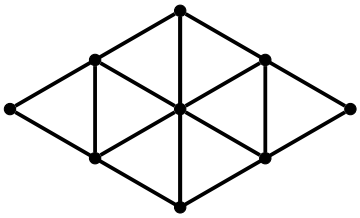
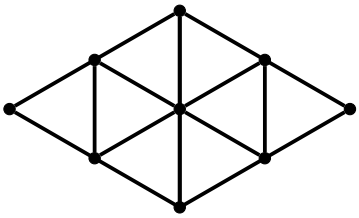
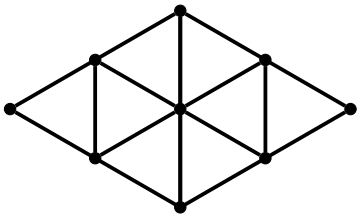
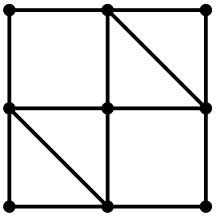
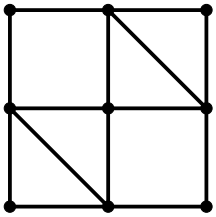
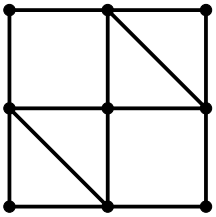
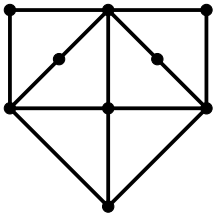
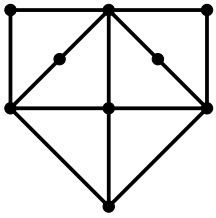
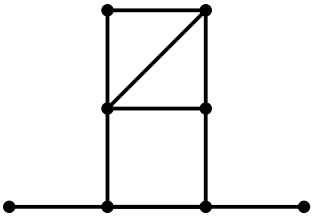
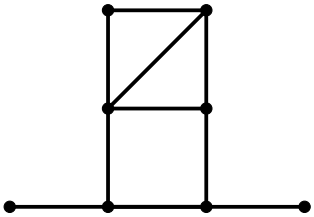
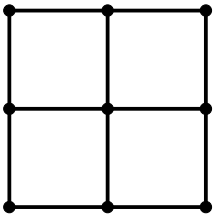
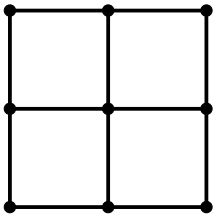
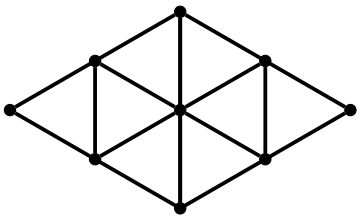
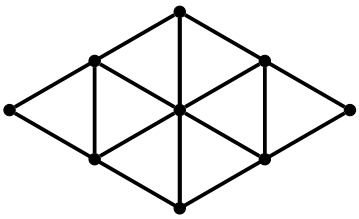
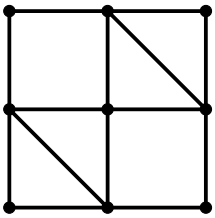
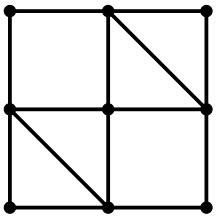
iii) Find a good Hamilton circuit using the sorted edges algorithm.

9. For this weighted complete graph:



i) Find a good Hamilton circuit using the repeated nearest neighbor algorithm.

ii) Find a good Hamilton circuit using the sorted edges algorithm.

Euler circ.	Euler path	Min. dup. circ.
		
		
		
		
		

Min. dup. path	Ham. circ.