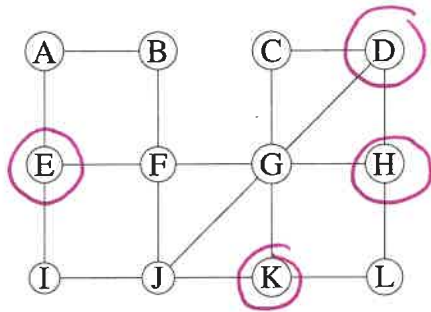


Name: Solutions score: \_\_\_\_\_ / 10

There are 10 points possible on this quiz. No aids (book, notes, etc.) are permitted. You may use a calculator. **Show all work and supporting calculations for full credit. Explain how you get your answers.**

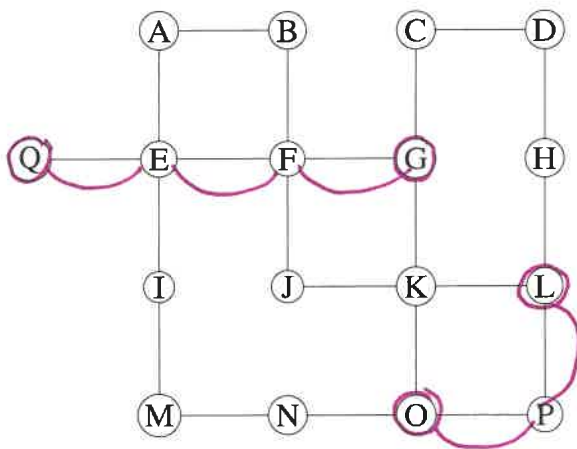
1. (3 points) Answer questions about the graph below.



- (a) Circle or shade all vertices of odd degree.
- (b) Determine if the graph has an Euler circuit. Justify your answer.

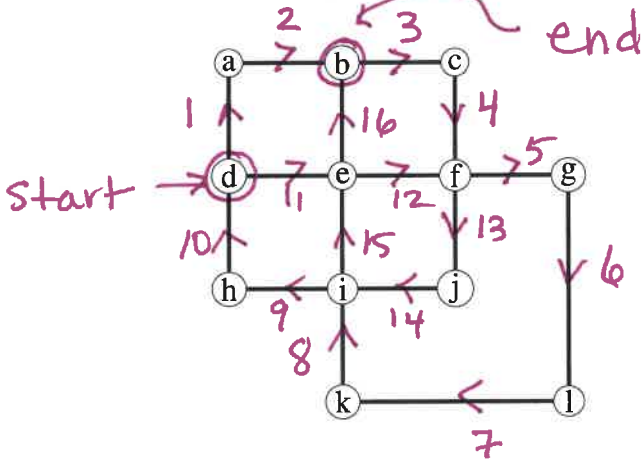
*It does not have an Euler circuit because it has a vertex of odd degree.*

2. (3 points) Eulerize the graph below using as few edge duplications as possible.

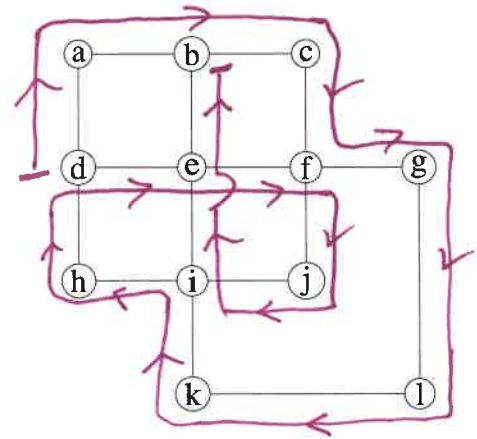


*I circled the vertices of odd degree. Then I find shortest paths between pairs of them and add edges along those shortest paths*

3. (2 points) Find a Euler path in the graph,  $G$ , below. Indicate your path by drawing arrows on the edges and numbering the edges. Label the starting and ending vertices. (There is a copy of the graph as scratch if needed. **Clearly indicate which graph you want graded.**)



Graph  $G$

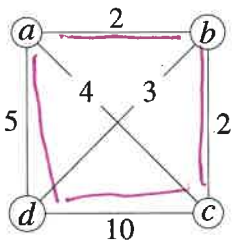


another copy of Graph  $G$

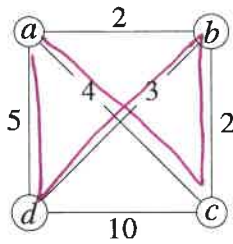
another way ~~to~~ to think about my path.

4. (2 points) Find a Hamiltonian circuit of minimum weight in the graph below. Several other copies of the graph provided.

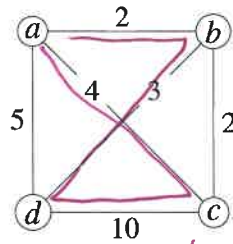
Thinking



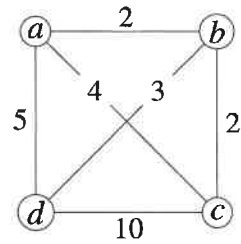
use the two cheapest edges  
weight 19



avoid the 10 weight  
14



try anything else I can think of  
weight 19



vertices of the Hamiltonian circuit: ~~ada~~ \_\_\_\_\_

weight: 14

ac bda  
or  
adbca