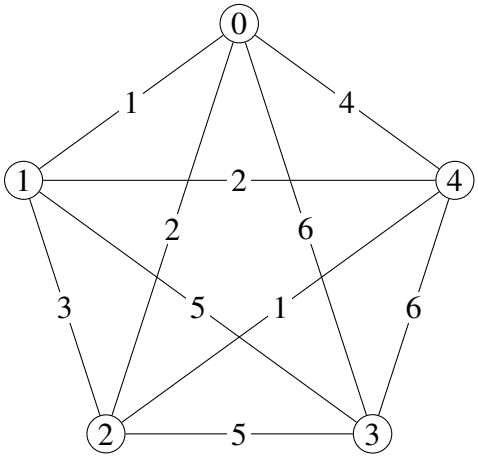
Name: Solutions score:_____ / 10

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.**

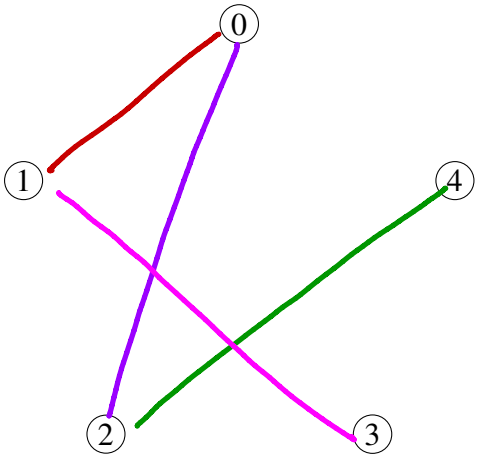
1. (3 points) Use Kruskal's Algorithm to find a minimum weight spanning tree in the graph below. A brief outline of Kruskal's Algorithm and a chart of edges ordered by weight is included.

   Kruskal's Algorithm: Select the cheapest edge in the graph that does not create a circuit. Stop when a spanning tree is obtained.



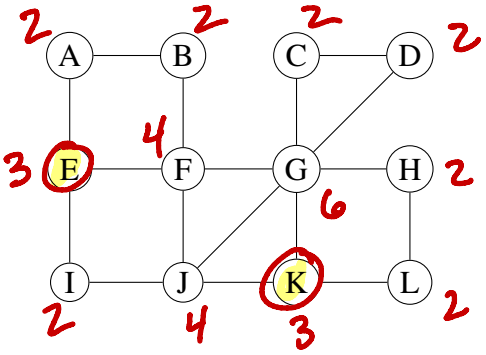
edge	weight
01	1 ✓
24	1 ✓
02	2 ✓
~~14~~	~~2~~
~~12~~	~~3~~
~~04~~	~~4~~
13	5 ✓
23	5
03	6
34	6

   Draw the minimum weight spanning tree below:



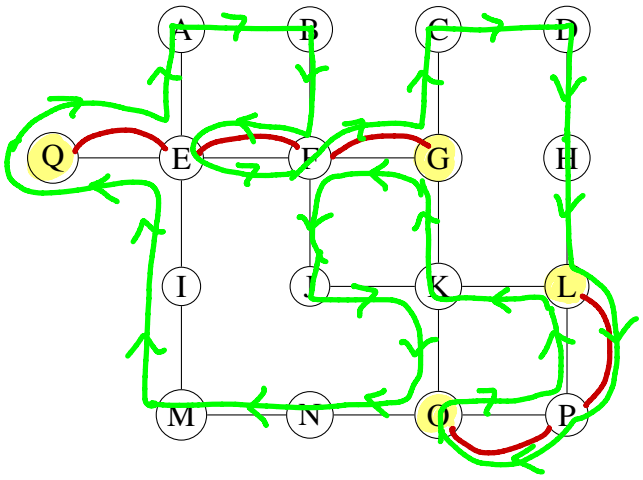
   Minimum weight: 1+1+2+5=9

2. (3 points) Does the graph below contain an Euler circuit? An Euler path? You are **not** asked to find one, only to determine if one exists. **Justify your conclusion.**



Because it has exactly two vertices of odd degree, it has an Euler path but not an Euler cycle.

3. (4 points) Eulerize the graph below using as few edge duplications as possible. Then find an Euler circuit.



- The highlighted vertices have odd degree
- The red edges are duplications. Only 5 are needed.
- Euler circuit.