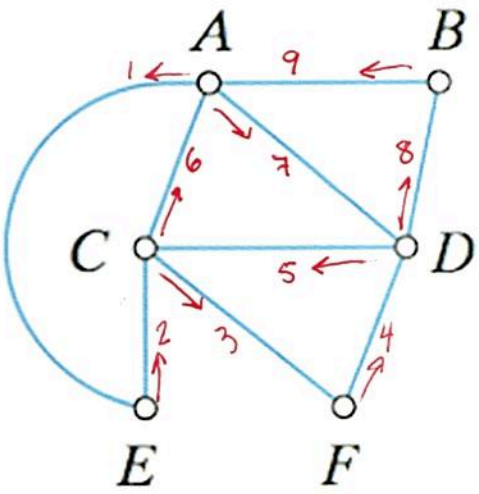
MT 112, Quiz #7, Spring 2020 Name KEY

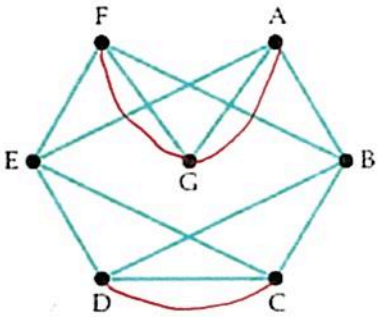
Instructions: Show all work. Answers without work can only be graded all or nothing. Partial credit is available only when work is shown.

1. Using the graph shown, determine if the graph has an Euler circuit or an Euler path. If it has either (a circuit or path), find it by selecting an appropriate starting point, and then numbering the edges in order as you traverse the circuit/path. If the graph has neither a circuit or path, explain why not.



all vertices are even
Circuits will vary

2. The graph shown does not have an Euler path or circuit. Eulerize the graph so that there is an Euler circuit. (You do not need to trace out the circuit, just add the necessary edges.) What is the minimum number of edges that need to be added to make the circuit?

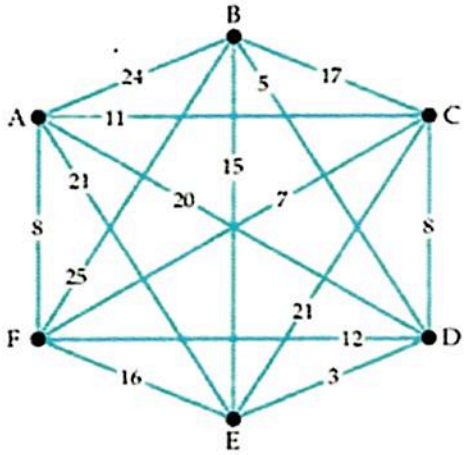


4 vertices are odd. minimum needed to make a circuit is 2 edges, depending on how close they are. This graph needs 3

3. Using complete weighted graph below, determine the number of distinct Hamilton circuits that exist. Then use a) Nearest Neighbor and b) Cheapest Link/Sorted Edges to approximate the minimum cost circuit. (You should have one answer for (a) and one for (b).)

$\frac{(n-1)!}{2} = \frac{5!}{2}$

$= 60$



Nearest Neighbor starting at A (other starting positions may vary the solution)

A-F-C-D-E-B-A

8 + 7 + 8 + 3 + 15 + 24 = 65

Cheapest Link

3 + 5 + 7 + 8 + 17 + 21 = 61