

TEST 2

Your Name (please PRINT): _____

=====INSTRUCTIONS=====

- Fill in the above items.
- There is a total of 5 problems, for a maximum possible total value of 60 points. **Make sure you have all 6 test pages (this cover page + 5 test pages).** You are responsible to check that your test booklet has all 6 pages. Alert a proctor if your copy is missing any pages.
- **Show all your work.** Only minimal credit will be given for answers without supporting work.
- **Write your answer in the box** at the bottom of pages 2-6.
- **Use the back of test pages if additional space is needed,** and for scratch paper.
- No calculators are allowed on this exam.

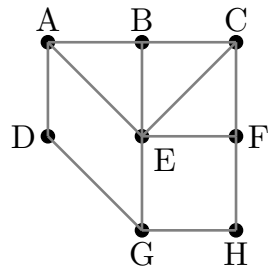
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Pb. #	Max Points	Your Score
1	10	
2	10	
3	10	
4	16	
5	10	
Total	(50)	

1. Define $K_{4,2}$ to be a graph with vertices $\{A, B, C, D, E, F\}$. Vertices A, B, C and D are each connected to vertices E, F , there are no other edges. Draw $K_{4,2}$ and determine if it is planar.

2. Draw the graph with vertex set $Q_0 = \{A, B, C, D, E, F, G\}$ and edge set $Q_1 = \{AB, AD, AG, BC, BD, BG, CG, DG, DE, EF, FG\}$. Determine if this graph has an Eulerian path and if so, find the path. Write the path down by listing the vertices it visits in order.

3. Justify why the following graph does not have an Eulerian circuit or path and then find an Eulerization of the graph.



4. Consider the Traveling Salesperson problem with cost chart as follows:

	A	B	C	D	E
A	*	20	17	33	45
B	20	*	36	71	30
C	17	36	*	44	26
D	33	71	44	*	53
E	45	30	26	53	*

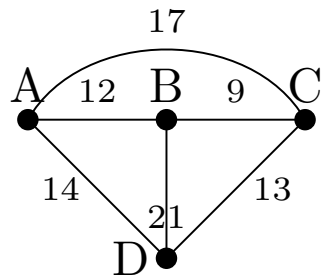
Find a solution to this TSP using the repetitive nearest neighbor algorithm. Explicitly write out the tour you take from each vertex.

4. (Continued) Recall the Traveling Salesperson problem from the previous page:

A	*	20	17	33	45
B	20	*	36	71	30
C	17	36	*	44	26
D	33	71	44	*	53
E	45	30	26	53	*

Find a solution to this TSP using the cheapest link algorithm.

5. Consider the Traveling Salesperson problem:



Find a solution to this tour starting at vertex A using the brute force algorithm.