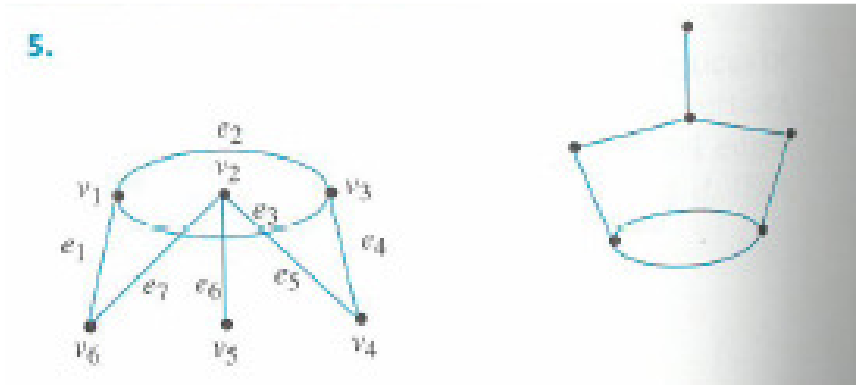
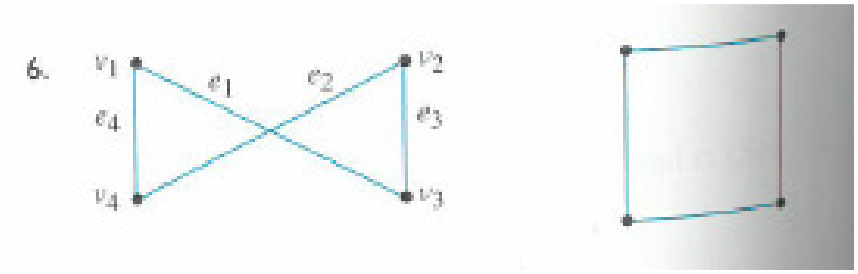
Math 231 – HW 14 **Name:** _____

Epp 2nd Ed.	11.1	5, 6, 8, 10, 12 (optional), 17, 18, 25, 26
	11.2	8, 9, 12 - 14, 16 - 20, 22 - 24

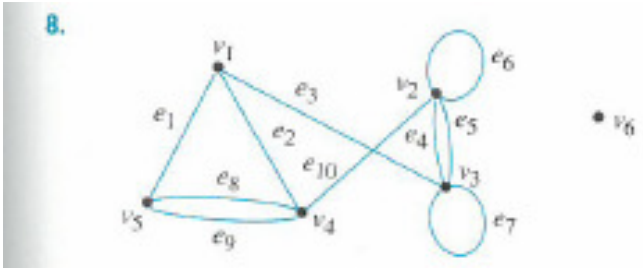
11.1 (5) Show that the two drawings represent the same graph by labelling the vertices and edges of the right hand drawing to correspond to those of the left hand drawing.



11.1 (6) Show that the two drawings represent the same graph by labelling the vertices and edges of the right hand drawing to correspond to those of the left hand drawing.



11.1 (8)



i. edges incident on v_1:

ii. vertices adjacent to v_3:

iii. edges adjacent to e_1:

iv. all loops:

v. all parallel edges:

vi. all isolated vertices:

vii. degree of v_3:

viii. total degree of the graph:

11.1 (10) Use the graph on p. 608 to answer and explain:

(a) Does Sports Illustrated contain printed writing?

(b) Does Poetry Magazine contain long words?

11.1 (12) (optional) How will the wolf, goat, cabbage, and ferryman get across the river?

11.1 (17) Does a graph with exactly 4 vertices of degrees 1, 1, 1, and 4 exist? Explain why not or show a solution.

11.1 (18) Does a graph with exactly 4 vertices of degrees 1, 2, 3, and 4 exist? Explain why not, or show a solution.

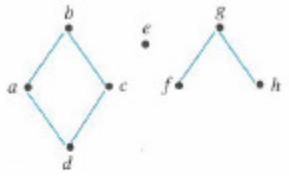
11.1 (25) (a) Can 15 people each have exactly 3 friends in a group (if friendship is reciprocal)? Explain why not, or show a solution.

(b) Can 4 people have exactly 3 friends each? Explain why not, or show a solution.

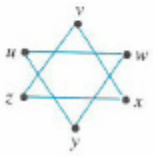
11.1 (26) Can 25 people each shake hands with exactly 1 other person in the group? Explain why not, or show a solution.

11.2 (8) How many connected components for each graph?

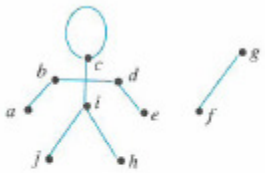
a.



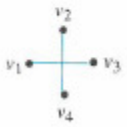
b.



c.



d.



11.2 (9) Does each graph have an Euler circuit? Explain.

(a) A connected graph with vertices of degree 2, 2, 3, 3, and 4.

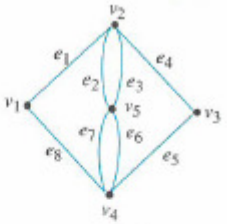
(b) A connected graph with vertices of degree 2, 2, 4, 4, and 6.

(c) A graph with vertices of degree 2, 2, 4, 4, and 6.

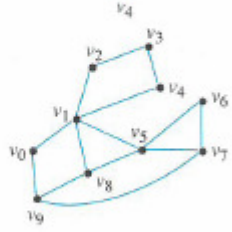
Determine which graphs have Euler circuits. Find Euler circuits for those graphs that have them. If they do not have an Euler circuit, explain why.

11.2 (12 - 14, 16, 17)

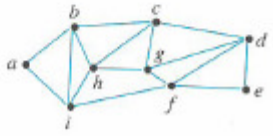
12.



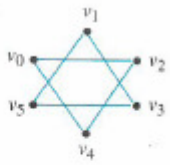
13.



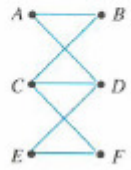
14.



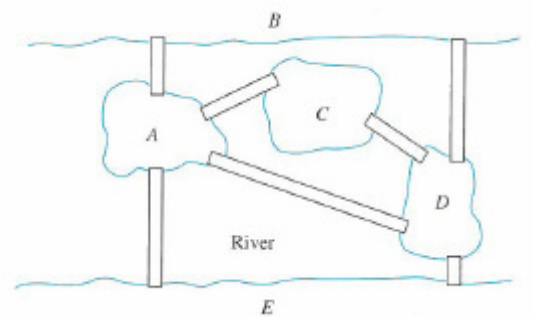
16.



17.

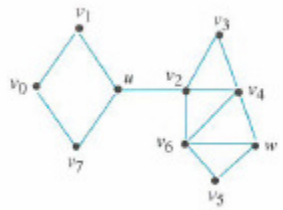


11.2 (18) Is it possible to take a walk around the city whose map is shown below, starting and ending at the same point, and crossing each bridge exactly once? If so, how can this be done?

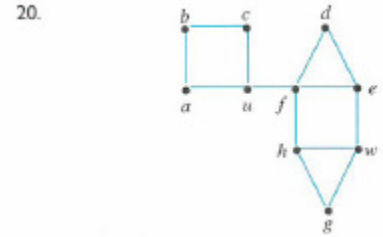


11.2 (19, 20) Determine whether there is an Euler path from u to w. If there is, find it. If there isn't, explain why.

19.

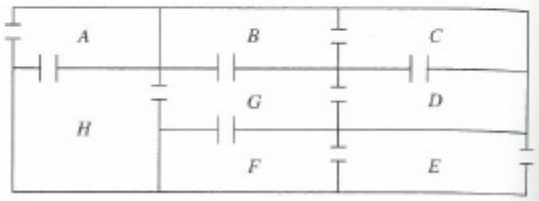


20.



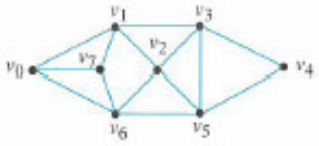
11.2 (22 - 24)

22. The following is a floor plan of a house. Is it possible to enter the house in room A, travel through every interior doorway of the house exactly once, and exit out of room E? If so, how can this be done?



Find Hamiltonian circuits for each of the graphs in 23 and 24.

23.



24.