Math 111 Contemporary Mathematics **Name:** _____
Fall 2015 **Graph Theory Day 9**
Lecturer: Dr. Paullin

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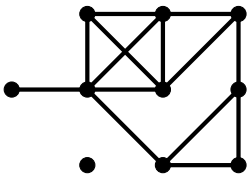
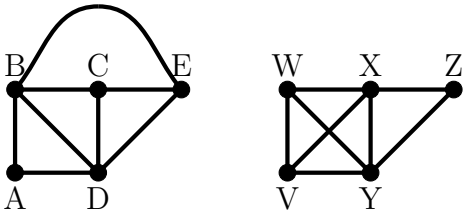
(1) Consider the graph.



(a) Find **v**, **e**, **f**, and **c**.

(b) Find the degree list for this graph.

(2) The two graphs below are isomorphic.



(a) Which vertex in the 2nd graph does **A** get mapped to?

(b) Which vertex in the 2nd graph does **B** get mapped to?

(3) Is it possible to draw a graph with vertices that have degrees: 1,2,2,3,4,7 ? Prove it!

(4) A connected planar graph has vertices of degree 4, 4, 6, 7, 15. How many **edges** are there?

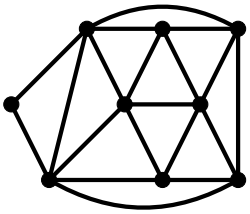
(5) A connected planar graph has 64 vertices and 184 edges. How many **faces** are there?

(6) A connected planar graph has 97 edges. What is the **sum of the degrees of the faces** of the graph?

(7) A **disconnected** planar graph has 6 vertices, 6 edges, and 3 faces. How many **components** are there?

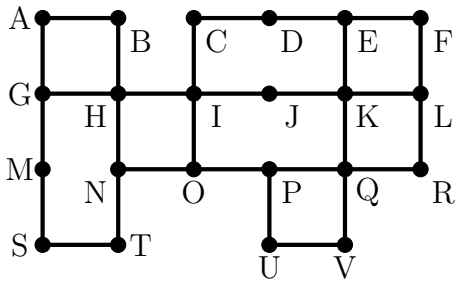
(8) Consider the graphs below.

(a)



What is the Chromatic Number?
Is there an Euler circuit? _____If no, how many legal edges need to be added in order to Eulerize the graph?
Is there an Euler path? _____If no, how many legal edges need to be added in order to Semi-Eulerize the graph?

(b)



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(9) The math department is having difficulties scheduling courses A–G because of limited room availability. In the chart below, an "X" means two courses cannot be scheduled at the same time. Make a graph with vertices A–G. Make an edge between vertices if the corresponding courses cannot be scheduled at the same time. How many timeslots do we need to schedule all the classes?

	A	*B*	*C*	*D*	*E*	*F*	*G*
A		X		X	X		X
B	X		X				
C		X				X	X
D	X					X	
E	X					X	
F			X	X	X		
G	X		X				