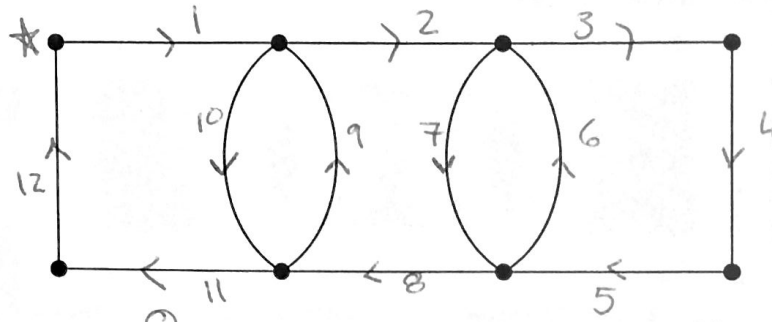Name: _____

1. A graph is a mathematical object which is defined by the following two pieces of information:

2 pts

<u>Vertices</u>   <u>Edges</u>

2. (a) In the following graph: What is the number of vertices? The number of edges? Is the graph connected? Does each vertex have even valence? Is there an Euler circuit in this graph?

3 pts

Vertices: **8**   Edges: **12**   Connected: **Yes**

Even Valence: **Yes**   Euler Circuit: **Yes**

(b) If the above graph does have an Euler circuit, find it. If it does not, explain why not. (You may use a theorem from class, but you must say why the theorem does or does not hold.)

3 pts   See numbering above.

3. Is the graph from Question 2(a) the same as the following graph? Why or why not?

2 pts

No! Possible Reasons:

- This one is not connected
- This one has vertices of odd valence
- This one has only 10 edges.