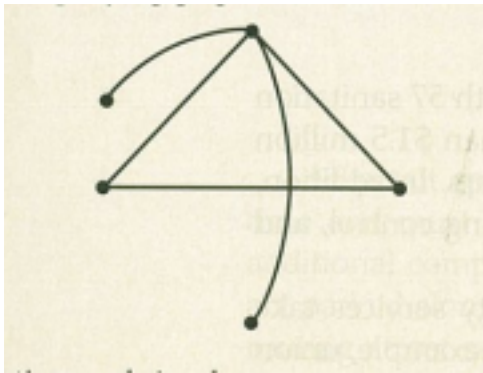


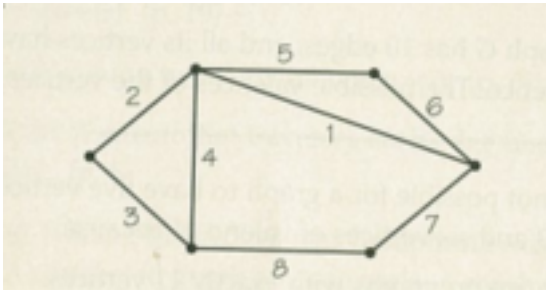
Homework Assignment No. 1

This assignment is due on Friday, January 22.

Problem 1 (1sc) The accompanying graph has how many edges and how many vertices?



Problem 2 (19sc) Consider the path represented by the sequence of numbered edges on the graph below. Which statement is correct?



- a *The sequence of numbered edges forms an Euler circuit.*
- b *The sequence of numbered edges traverses each edge exactly once but is not an Euler circuit.*
- c *The sequence of numbered edges forms a circuit but not an Euler circuit.*

Problem 3 Below is a map of South America. Draw a graph that represents this map, where each vertex represents a country and edges exist between countries that share a border.



Problem 4 (20)

a *Is it possible that a street network gives rise to a disconnected graph? If so, draw such a network of blocks and streets and parking meters. Then draw the disconnected graph it gives rise to.*

b *Draw a graph where every vertex has valence at least three but where removing a single edge disconnects the graph.*

c *In what urban settings might a road network be represented by a graph that has an edge whose removal would disconnect the graph?*

Problem 5 (40) In the accompanying graph, add one or more edges to produce a graph that has an Euler circuit.

