Written Assignment # 8

Math 38

Due: Wednesday 20, 2005

Read Section 2.1

1. Define a forest and a tree. What is the difference? Can a tree be a forest?
2. What graph is called a star? Which tree, T has $\Delta(T) = 2$?
3. According to Theorem 2.14 what are the four ways in which we could have defined a tree?
4. Define a spanning tree and give an example of a spanning tree for the Petersen graph.
5. In your own words describe what Proposition 2.1.6 is saying.
6. How do we define the distance between two vertices in a graph?
7. Compute the diameter, radius and the eccentricity of every vertex for the middle graph in Exercise 1.1.19 in page 16.
8. What is the diameter of $K_{n,m}$? What is the diameter of its complement?
9. What is the center of the Petersen graph? K_n? $K_{n,m}$?
10. How do we prove that the center of a tree is either an edge or a vertex?
11. What is the Wiener index and what is an application of this function?
12. Is it true that every graph with less edges than vertices has a component that is a tree? Justify your answer.