There are 20 problems, each worth 10 points on 8 pages

Circle your answers.

Math 574 Final Exam 1987

Name

1. How many words of length 5 can be made from the alphabet Z,a,b,c,3?

2. How many 6 element subsets does a 10 element set have?

3. Suppose G is a tree with n vertices and e edges, give a formula which relates n and e.

4. Give an example of a graph which satisfies the formula in 3 but is not a tree.

5. Solve the recurrence relation $a_n = a_{n-2}$, $a_0 = 4$, $a_1 = 6$.

6. What is the chromatic polynomial $P(G,x)$ of the following graph?

7. Draw a graph with chromatic polynomial equal to $P(G,x) = x^4 (x-1)^3 (x-2)^3 (x-3)^2 (x-4)$

8. In a graph with 16 edges, what is the minimum possible number of vertices?

9. In a connected graph with 16 edges, what is the maximum possible number of vertices?