Last name _____

First name _____

LARSON—MATH 350—CLASSROOM WORKSHEET 26
Catalan Numbers in Graphs

Organizational Notes

1. A Zoom recording link and class notes will be sent out after each class.

2. Remember to send your answers to the classroom worksheets. Title your email with enough to help me record your "participation".

3. Homework #6 is due today (Thursday).

4. Reading ahead: Non-Crossing Murasaki diagrams (p. 43 #161).

5. Test #2 is on Mon., Dec. 7.

6. Don't forget your Teacher Evaluations. They are important!

Review

1. What is a *matching* in a graph?

2. What is a *complete matching* in a graph?

3. What is *Pauling bond order*?

4. What is a *triangular benzenoid*?

Complete Matchings in Triangular Benzenoids (p. 52 #206.)

1. **(Problem:)** How many complete matchings are there of triangular benzenoids T_n?

2. How many complete matchings are there in T_1?

3. How many complete matchings are there in T_2?

4. How many complete matchings are there in T_3?

5. How many complete matchings are there in T_4?

6. **(Problem:)** How many complete matchings are there of triangular benzenoids T_n?

7. Stanley says that a complete matching in a triangular benzenoid can be associated to a Dyck path by "concatenating" the path of non-horizontal edges, and adding an "up" (U) at the beginning and a "down" (D) at the end. How will this work?

   Experiment on small triangular benzenoids and figure out the questions that must be answered.