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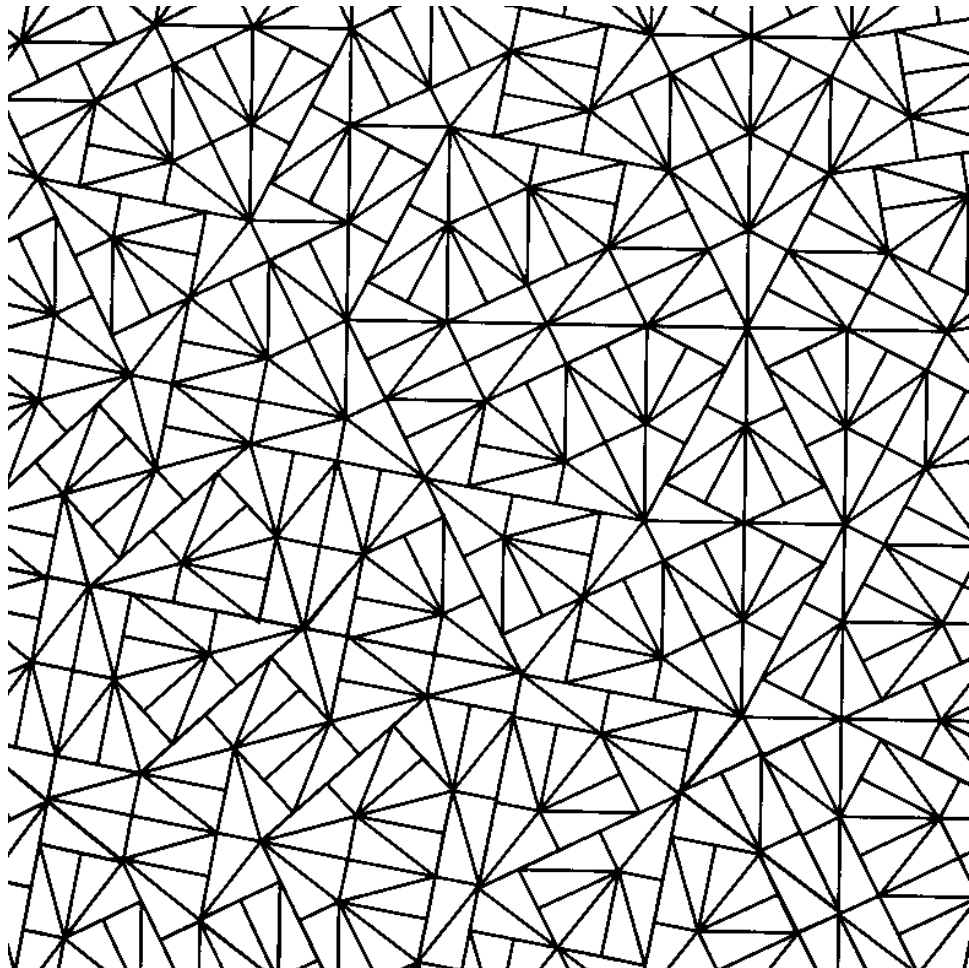
## MATH 110 – EXAM 3

Dr. Szczepański

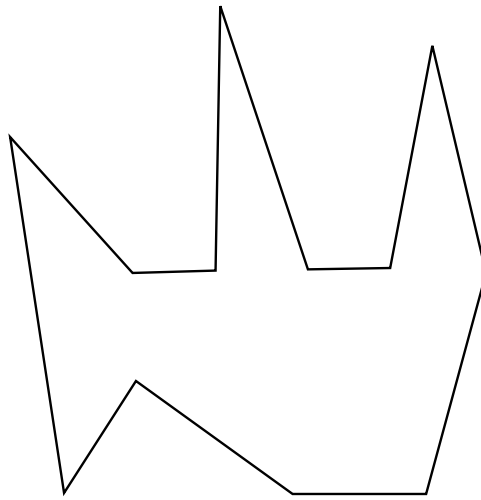
9 March 2005

**Directions:** There are ten questions on this exam. Answer every question. Show all work and justify your answers. Each question is worth five points.

1. Helena has sketched an art gallery that requires 7 cameras to view every point on the interior. What can you say about the number of vertices her gallery has?
2. pyth thm question goes here.
3. Describe a **simple, polygonal, closed curve** in your own words.
4. In the following piece of the Pinwheel Pattern:
  - (a) Outline a 5-unit supertile.
  - (b) Outline a 25-unit super-supertile



5. Sketch an Art Gallery that needs 3 cameras to see every point inside the gallery (can't be guarded with only 1 or 2).
6. For the following gallery:
- (a) Triangulate the museum by adding straight lines that do not cross each other yet span the insides and extend from one vertex to another (like we did in class and in the homework).
  - (b) Color each vertex of the gallery so that each triangle has one red, one yellow, and one blue vertex. You can use symbols to stand for the colors.
  - (c) At which vertices would you place the cameras?



7. (a) Sketch a 4-dimensional cube.  
(b) How many vertices (corners) are there on a 4-dimensional cube?
8. The short side of a Golden Rectangle has length 4. Find the length of the other side of the rectangle.
9. Prove the Pythagorean Theorem.