Quiz 3 Information

Math 282 Computational Geometry

The next quiz will be Thursday, January 19. To prepare for this quiz, you should study the material in Sections 2.5–3.2 and 3.4 of the text. Focus on the *definitions*, *examples*, *theorems*, and *algorithms* in the text.

In particular, you should be able to do the following:

1. Be able to state precise definitions of the following terms and give examples of them:

- triangulation of a planar point set
- edge flip, flip graph
- lexicographical order, legal edge
- Delaunay triangulation

2. Be able to give precise answers to the following questions:

- What is the optimal computational complexity for an algorithm that takes a set of n points in the plane and returns the hull points in order? How is this shown?
- How does the *divide-and-conquer* algorithm compute the convex hull of a set of points? What is the computational complexity of this algorithm?
- How are convex hull computations in 3D different than in 2D?
- How does the *triangle splitting algorithm* produce a triangulation of a point set?
- How does the *incremental algorithm* produce a triangulation of a point set?
- What is *Euler's Formula* for a connected planar graph?
- Given a planar point set S, is the flip graph of S connected? How is this shown?
- What is the *empty circle property* of a Delaunay triangulation?