COT5520 Computational Geometry

Homework Assignment # 5

Due: November 05, 2003

1. **Prove that for any $n > 3$, there is a set of n point sites in the plane such that one of the cells of Vor(P) has $n-1$ vertices.**
2. **Show that Theorem 7.3 implies that the average number of vertices of a Voronoi cell is less than six.**
3. **Let *P* be a set of *n* points in the plane. Give an O(*n*log*n*) time algorithm to find two points in *P* that are closest together. Show that your algorithm is correct.**
4. **Prove that the breakpoints of the beach line, as defined in Section 7.2, trace out the Voronoi diagram while the sweep line moves from top to bottom.**