

Special Triangulations

Math 282 Computational Geometry

- 1. Justify the following:** Let a, b, c, d be points in the plane, with a triangulation consisting of triangles Δabc and Δacd . Then edge \overline{ac} is a legal edge of the Delaunay triangulation if and only if d is outside of the circumcircle of Δabc .

- 2. Justify the following:** Let a and b be points in a planar point set S . If there exists a circle passing through a and b that contains no other points of S in its interior, then edge \overline{ab} is an edge of the Delaunay triangulation of S .

3. Suppose you have a Delaunay triangulation of a set of points S . If you add a new point p , describe an algorithm for updating the triangulation to obtain the Delaunay triangulation of $S \cup \{p\}$.