

CS531 Computational Geometry

Problem Set 1

Predicates and Algorithms

Handed out: Friday, January 13

Due: Monday, January 23

The first three problems are about 2D points.

Problem 1. Circle through three points

Give an algorithm for computing the center of the circle through three points. Describe and handle the degenerate cases.

Problem 2. Ray/line segment intersection

Specify a predicate that is positive when a ray intersects a line segment.

Problem 3. Circle/line segment intersection

Give an algorithm for testing if a circle intersects a line segment at two points.

Problem 4. Area of polygon

Give an algorithm for testing if two 3D triangles intersect.