

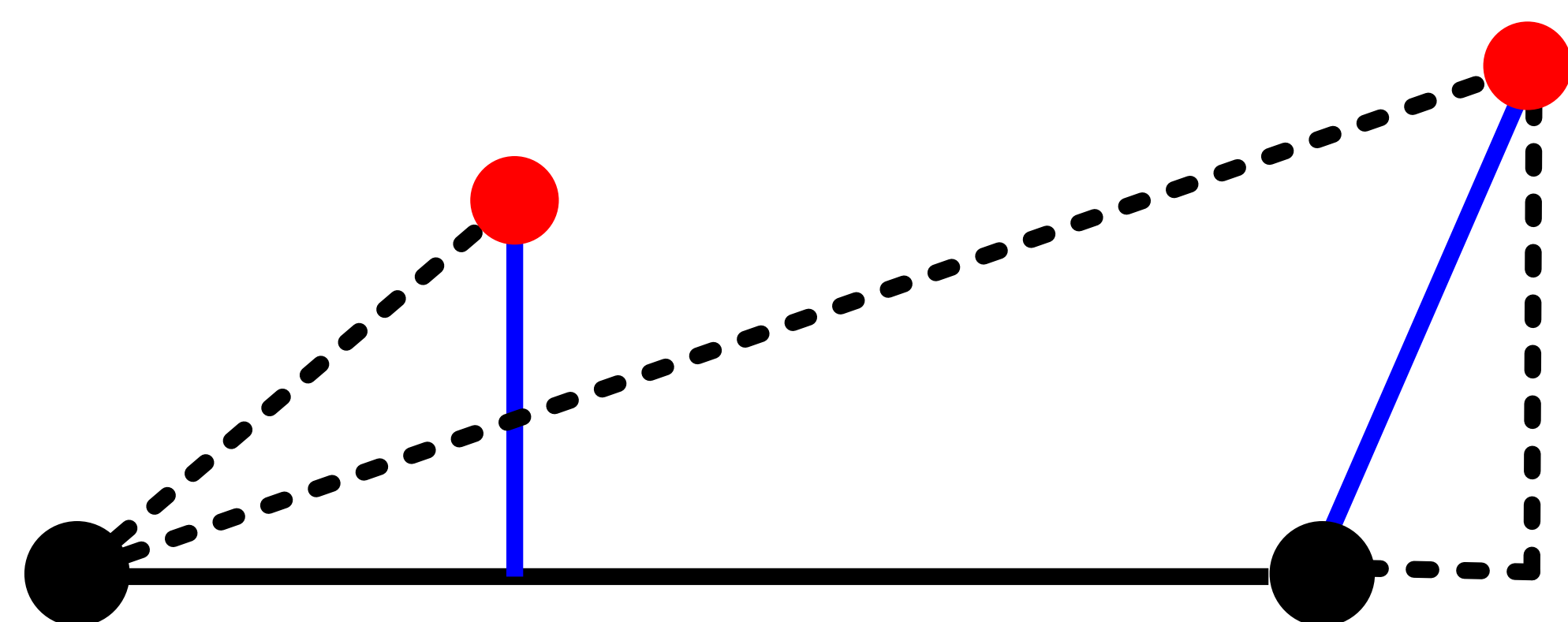
Easy

Find router furthest away from all polygon segments.

Point-segment distance

If projection of point on segment lies on segment (use scalar prod.), distance = height of spanned parallelogram (use vector prod.)

Otherwise, distance to closest endpoint



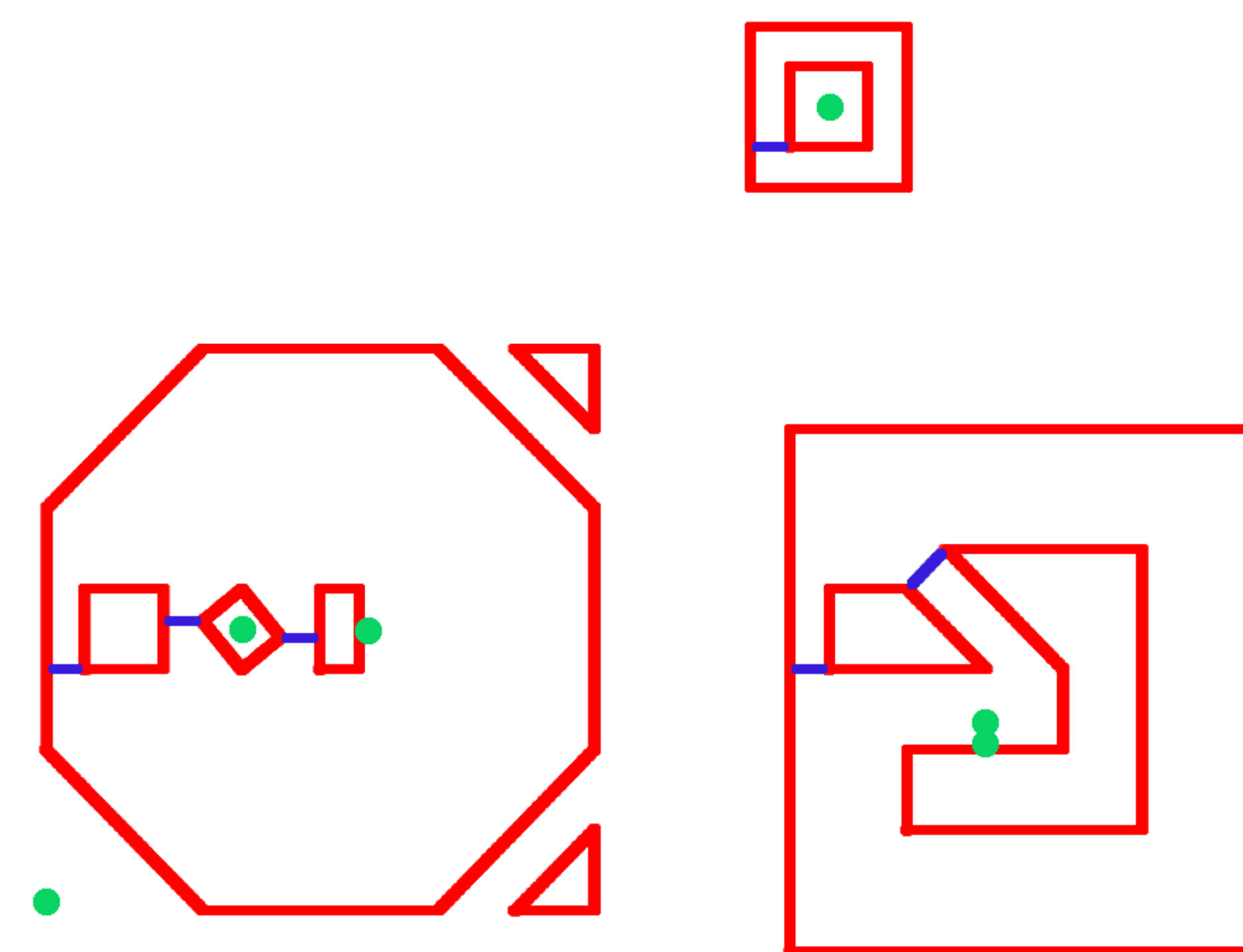
Medium

Point-in-polygon check

Assign inner polygons to outer polygons, assign routers to polygons:
Count of intersections between a line from point to infinity and polygon must be odd.

Dijkstra

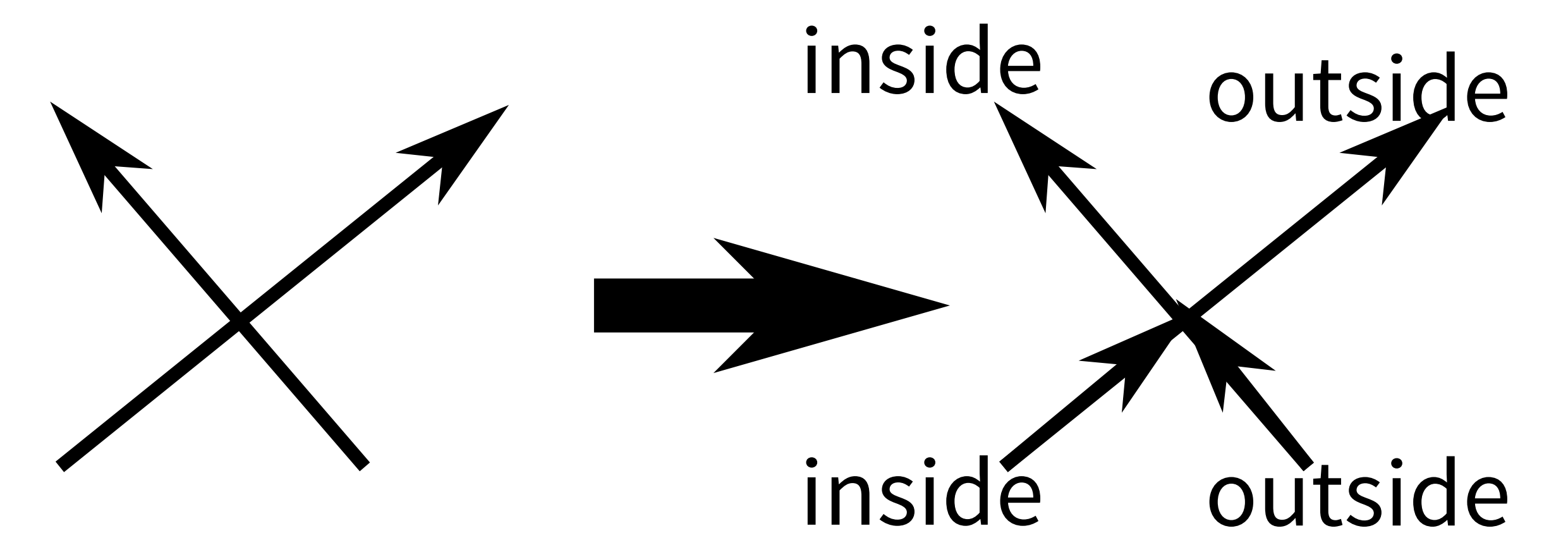
To find the shortest distance from outside to each inner polygon.



Hard

Polygon as linked list

Look for intersections and splice them into the polygons, use counter-clockwise definition to maintain "more inside" and "more outside"



Exhaustively look for cycles which are most outside.

For each such cycle, make sum of change in direction to determine whether it is an outer contour (counterclockwise) or an inner one (clockwise).