COT 4521-001: Introduction to Computational Geometry (Fall 2019)

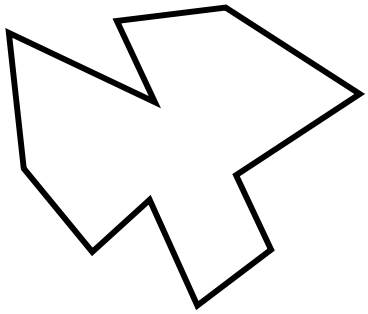
Worksheet 3

1 Ground Rules

This assignment is intended to be done alone. You may ask others for high-level help. However, the answer must be yours. For all questions we expect you to show yours work!

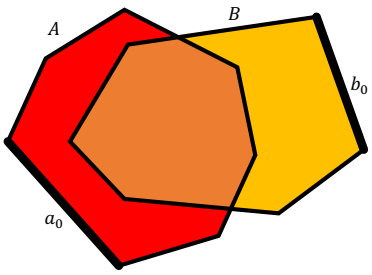
2 Assignment

1. For the following polygon (you can use the large image on the next page):



   - Draw all possible edges between non-adjacent vertices.
   - Denote those segments which are diagonals and those which are not.
   - For non-diagonal segments, state the reason they are not considered diagonal.
   - Is the polygon convex? Why or why not?

2. Given the 2 convex polygons, A and B, show the steps of the $O(M+N)$ algorithm to find $A \cap B$ discussed in class. Your algorithm should start at a_0 and b_0. (Use the page at the end of the document.)



   - Describe how you would modify the algorithm to find $A \cup B$, $A \backslash B$, and $A \ominus B$. (hint: describe it in terms of inner and outer chains.)

3 Submission

Upload your answers and associated work to canvas as a single scanned, typed, or photographed PDF document. Be sure that your submission is legible.