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Problem Set 10

due: January 6, 2020

Exercise 1

10 points

Consider the following two sets of points in $\mathbb{R}^2$:

$A := \{(4,6), (6,18), (12,6), (12,28), (15,40), (16,0), (16,43), (17,38), (19,38), (20,0), (20,43), (21,40), (24,6), (24,28), (30,18), (32,6)\}$,

$B := \{(0,8), (2,16), (8,8), (8,26), (11,36), (11,44), (16,8), (18,0), (18,48), (20,8), (25,36), (25,44), (28,8), (28,26), (34,16), (36,8)\}$.

Find an optimal TSP tour such that

- all points in $A \cup B$ are visited exactly once,
- the tour alternates between points in A and B, i.e., the two tour neighbors of any point in A belong to B and vice versa,
- the total Euclidean distance is minimum.

Please document your solution strategy. You may use any tool to solve the TSP instance to optimality, including `concorde` on the NEOS server (`https://neos-server.org`).

Finally, draw your optimal TSP tour in $\mathbb{R}^2$.

Have a nice Christmas!