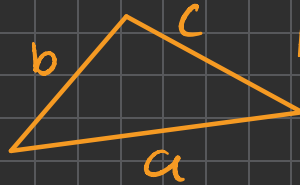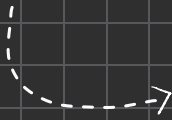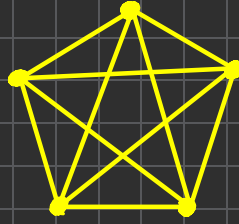# Traveling Salesman Approximation

Restrict the Problem
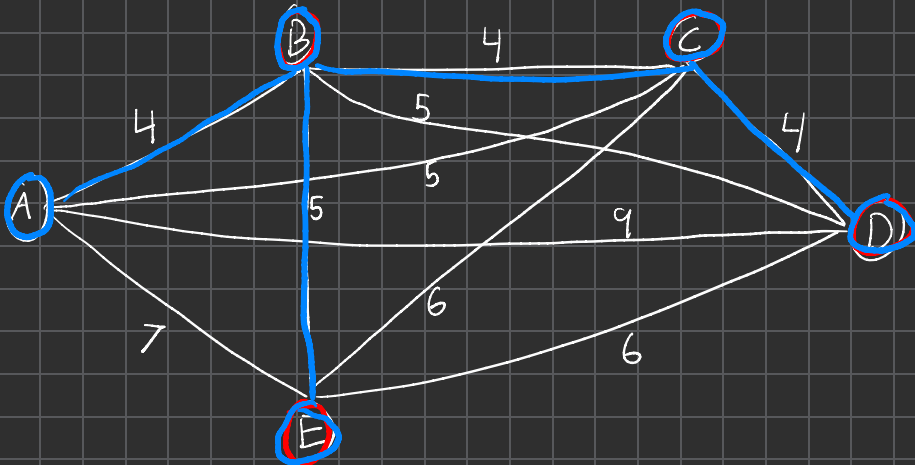
- Complete Graph ----------→
- Metric Space
  ↳ Undirected ("symmetric")
  ↳ Positive edge weights
  ↳ "Triangle Inequality"
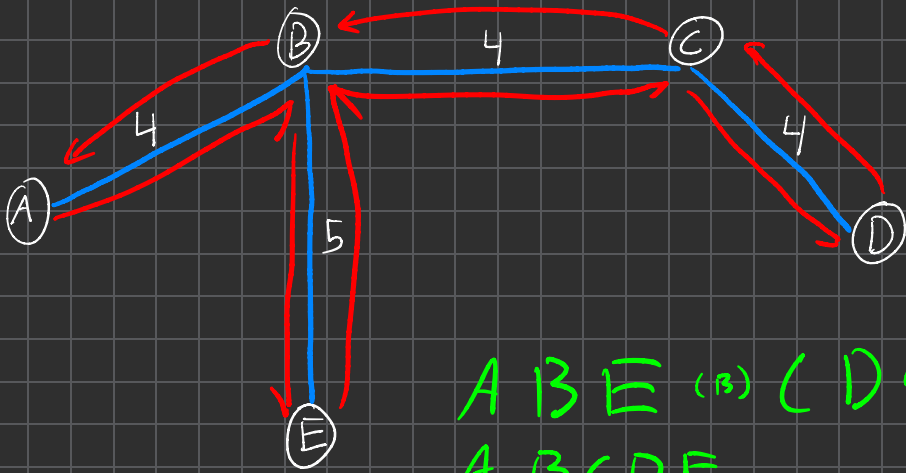
$$len(a) \leq len(b) + len(c)$$

The Algorithm

1. Choose the start.
2. Find a Minimum Spanning Tree (MST) with Prim's Algorithm. → $O(E \log V)$
3. Depth First Search (DFS) gives approximate solution.
   ↳ $O(V)$

$A \, B \, E \, {}_{(B)} \, C \, D \, {}_{(C)} \, {}_{(B)} \, A$

$A \, B \, C \, D \, E$

☆ Path length ≤ 2·(MST)