

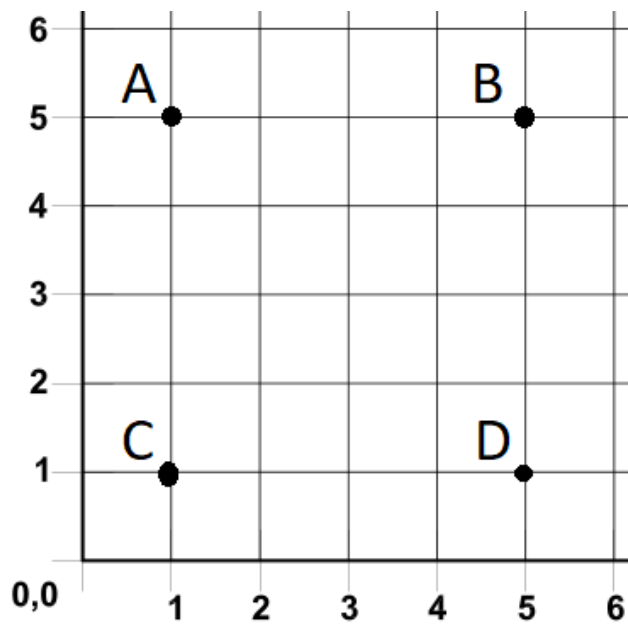
Tema 1

TSP

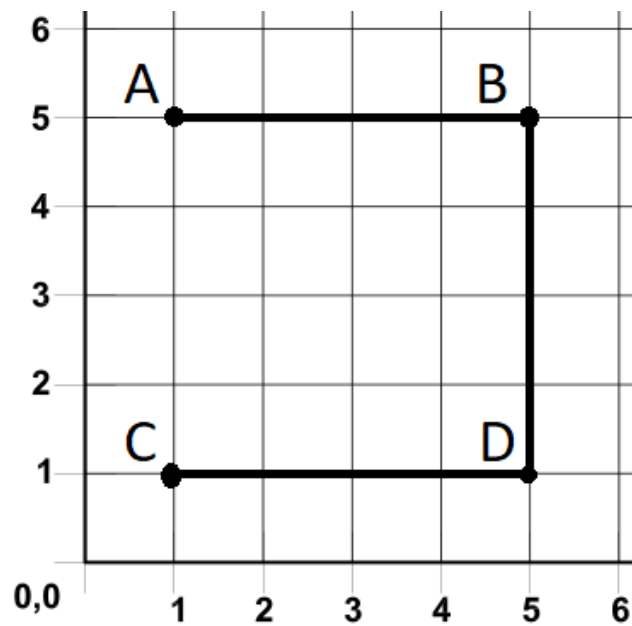
2)

a)

Fie multimea de puncte $P = \{A, B, C, D\}$ din figura de mai jos

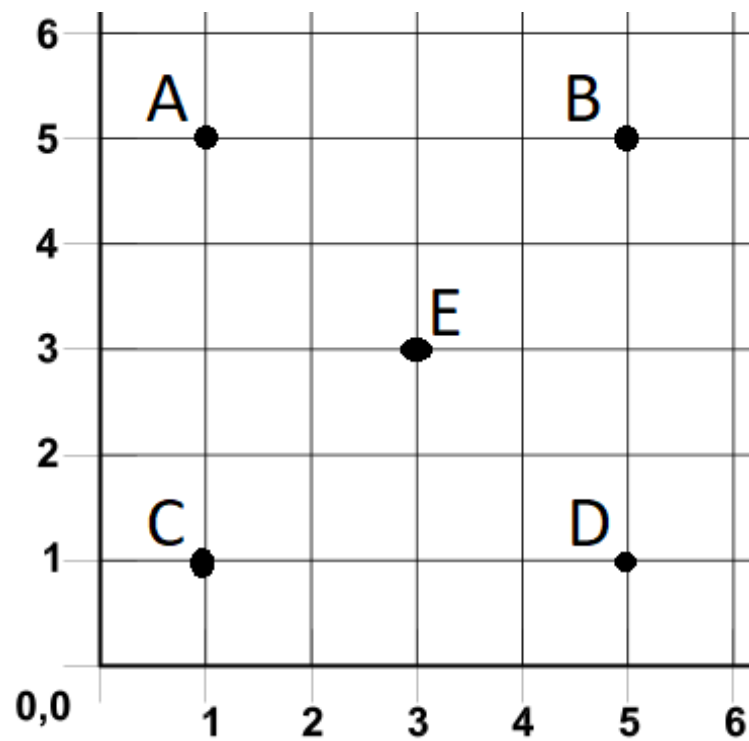


Fie $T = \text{MST-ul}$ pentru punctele A, B, C, D astfel:

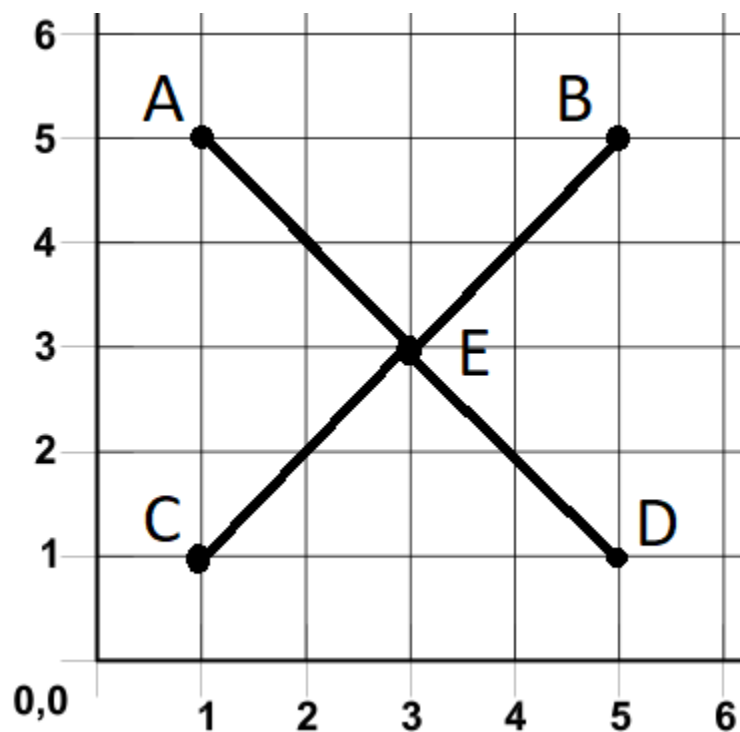


Costul lui T este $4 + 4 + 4 = 12$

Fie punctul $q=E$ in plan astfel:



Fie $T' = \text{MST}$ pentru punctele A, B, C, D, E astfel:



Cum $ABDC$ este patrat, iar E este centrul patratului de latura 4, atunci $AE = BE = CE = DE = \frac{4\sqrt{2}}{2} = 2\sqrt{2}$

Deci, costul noului MST este $4 * 2\sqrt{2} = 8\sqrt{2} \cong 11,314 < 12$.

Asadar, exista cazuri in care alegand un punct $q \notin P$, MST-ul pentru multimea de puncte $P \cup \{q\}$ are un cost mai mic decat T .