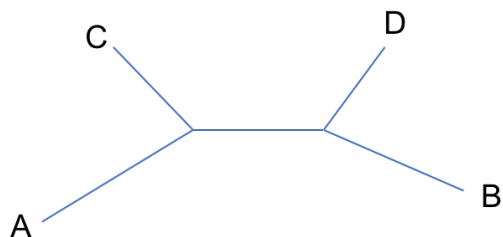
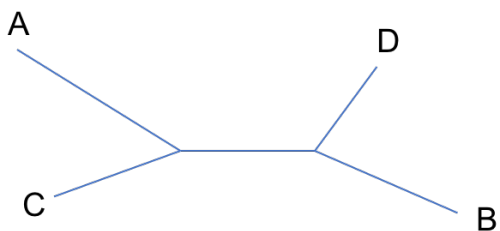


### Neighbor-Joining and Tree Walks

We are given  $\mathcal{X} = \{A, B, C, D\}$  and the dissimilarity map  $\delta$  on  $\mathcal{X}$  below.

$\delta$	A	B	C	D
A	0	10	7	12
B		0	9	5
C			0	10
D				0

The two trees below have the same topology and edge weights (isomorphic), but different “walks” around the tree result in different distances with respect to the original map  $\delta$ . A walk around the tree starts at a given vertex  $v$  and visits every leaf, following the “outside” of the topology and finally returning to  $v$ . For the two trees below, compute the length of a tree walk that starts and ends at vertex  $A$ .



Extra practice: run the Neighbor-Joining algorithm on  $\delta$  to obtain a tree topology and edge weights.