

Homework 5

Phylogenetics

Due date: Thu., 21/11/2013

1. (2 points) Show that $d(T, T') = |E(T)| + |E(T')| - 2|\Sigma(T) \cap \Sigma(T')|$.
2. (3 points) Show that $d(T, T')$ is equal to the smallest k for which there is a sequence $T_0, T_1, \dots, T_k$ such that $T_0 = T$, $T_k = T'$ and for all $i \in \{1, \dots, k\}$, T_i is obtained from T_{i-1} by either contracting or expanding an edge of T_i .
3. (2 points) What is the maximum possible size for any pairwise compatible set of X -splits.
4. (3 points) Prove that the elements of C^* as defined in the construction of Adams consensus trees indeed form a partition of X .