11/11/16  Assignment 1 in Data Alg's  (Due to Dec. 15)
1) Describe an alg that colors an oriented tree in O(log n) colors. Analyze it, its run time.
2) Analyze the recursive formula that governs the running time of Cole-Vishkin's alg for an oriented tree.
3) The same as #2, but for the version of Cole-Vishkin for u-vx graphs with maximum degree at most Δ.
4) We are given an L-coloring ϕ of an oriented tree. Using just one single application of the sheft-down procedure and without using Cole-Vishkin's
recoloring technique, color the tree into 5 colors properly, with as few re-colors as possible.

5) Devise an alg that computes the diameter of an oriented, possibly undirected tree, in CONGEST model in $O(D)$ time. Prove correctness.

6) Show that Maximal Matching (under containment) is at least a 2-approximation of Maximum Cardinality Matching.

7) Prove that the chromatic number of Grothendieck's graph is 4. Try to think about a triangle-free graph with chromatic number 5. Enjoy!