1. Insert into an initially empty 2-3-4 tree, in the order given, the following values:

12, 13, 17, 10, 4, 6, 9, 15, 30, 25, 20, 40.

Show the intermediate trees after each insertion that causes a split. [6 points]

2. Insert the values above into an initially empty red-black tree. Show the tree after each insertion that causes any color shifts or rotations. [6 points]

3. From the tree derived at the end of the previous problem, delete 13 and then 12. [6 points]

Total: 18 points