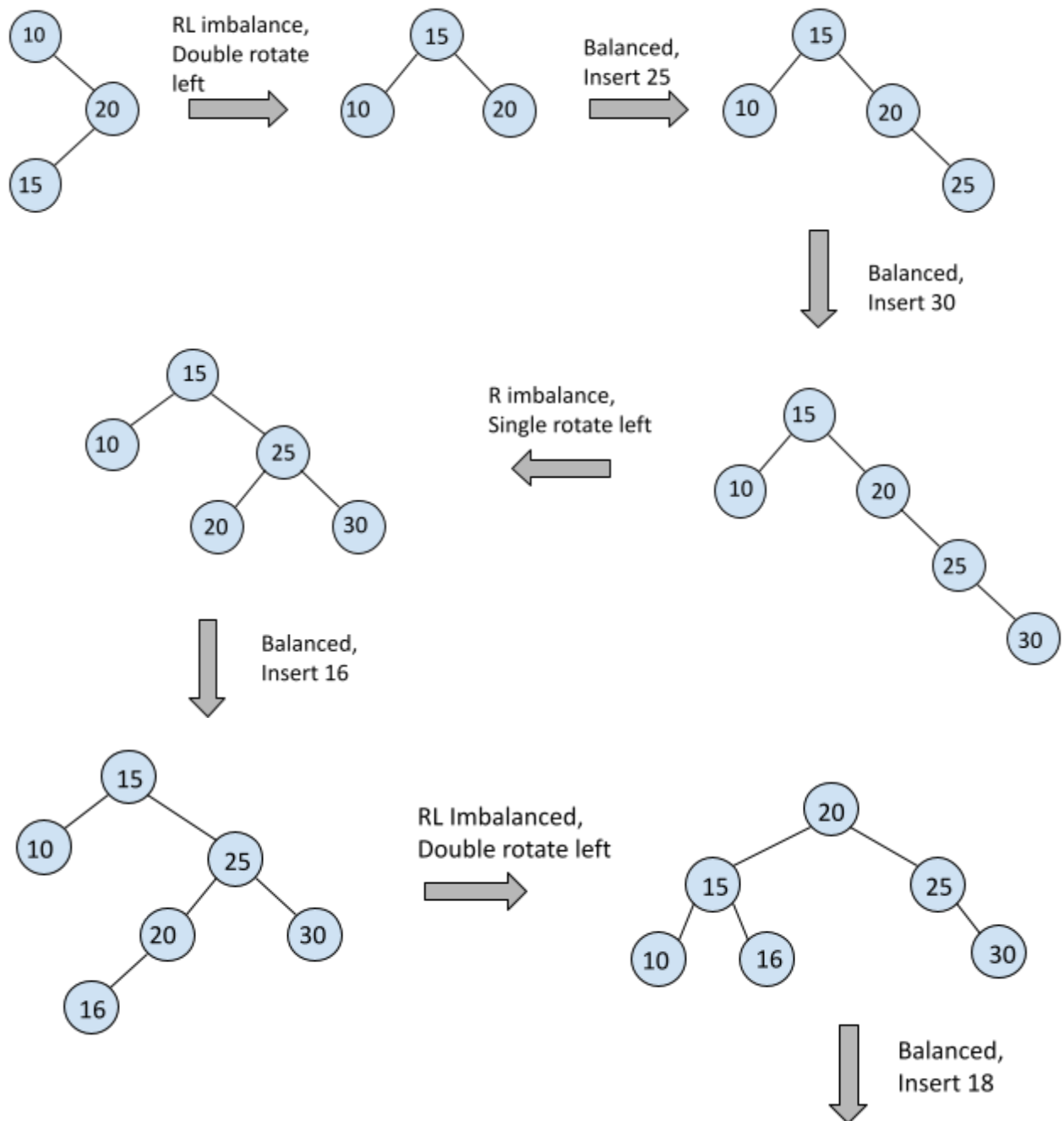
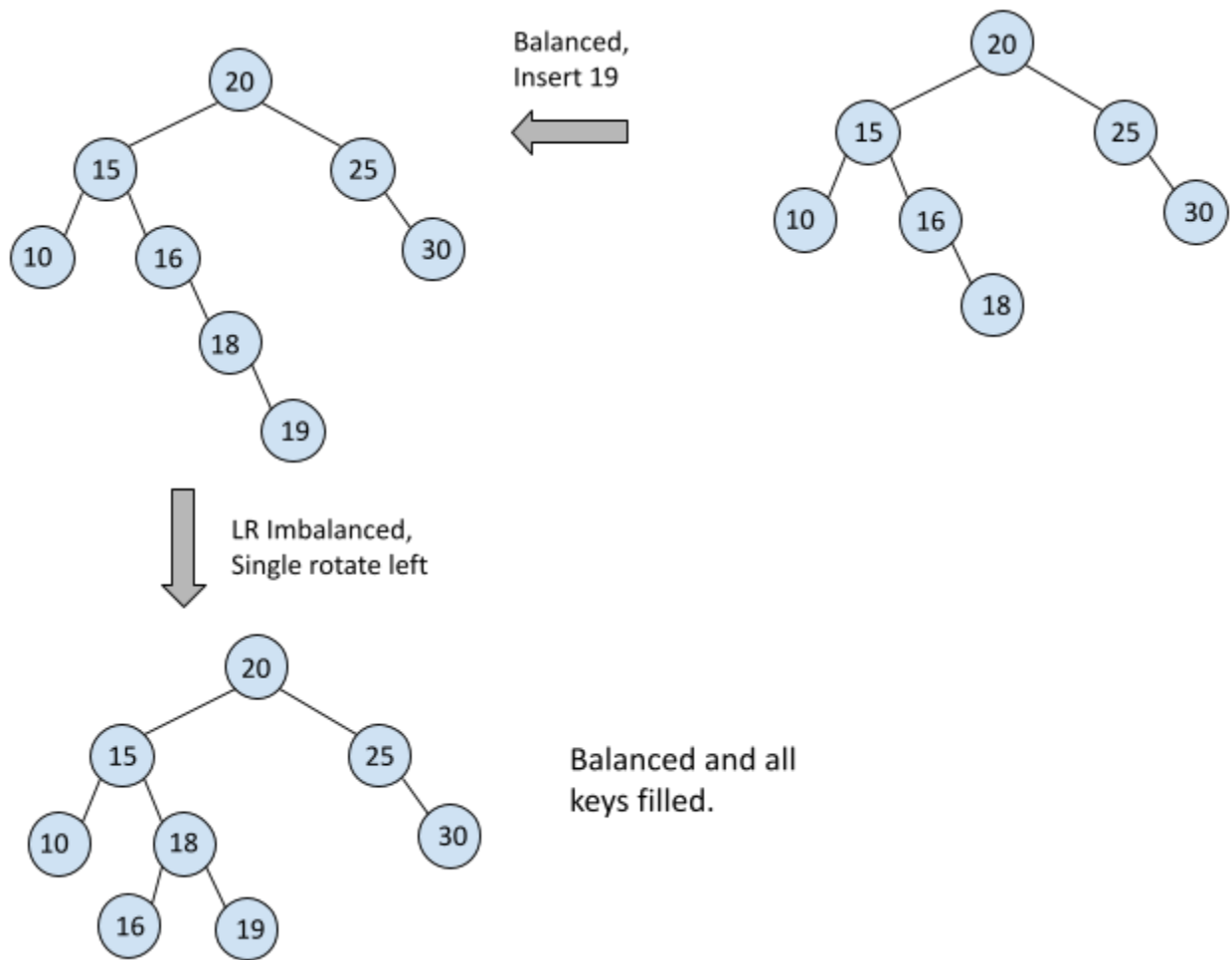


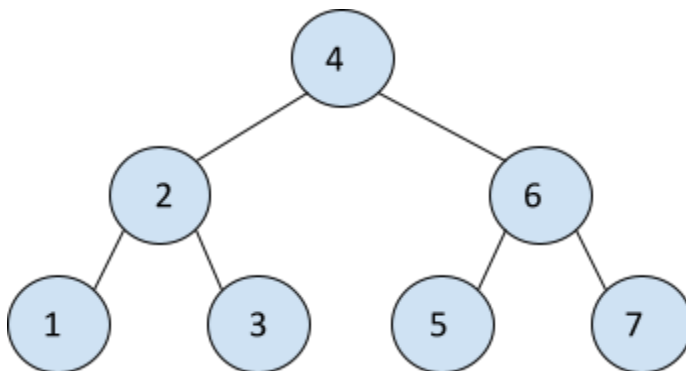
### Problem #1: (30 pts)

A) Show the **result of every step** of inserting the following sequence of elements into an initially empty **AVL-tree**: 10, 20, 15, 25, 30, 16, 18, 19.

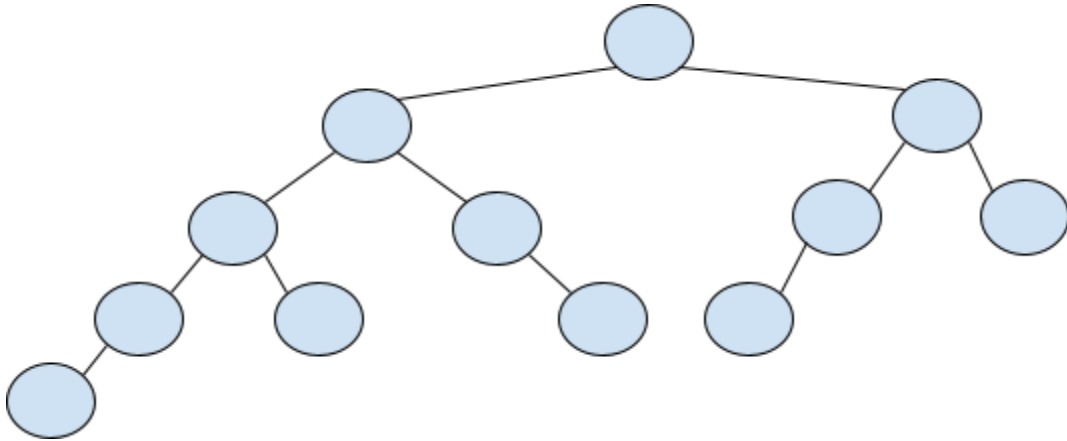




- B) Show the results when an initially empty **AVL-tree** has keys 1 through 7 inserted in order (1, 2, 3, 4, 5, 6, 7).



C) Draw an **AVL-tree** of height 4 that contains the minimum possible number of nodes.



D) The following items are listed into an AVL-tree: 1, 2, 3, 8, 6. How many and what type of rotations are performed? Justify.

- A single rotate left is performed after the 3 is inserted since the 3 causes a R imbalance. A double rotate left is performed after the 6 is inserted causing an RL imbalance.