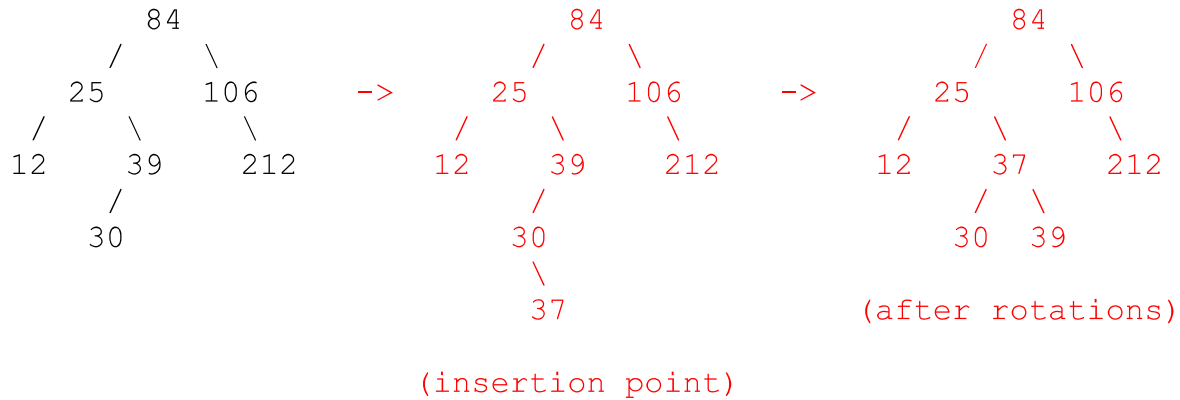


3) (10 pts) ALG (AVL Trees)

a) Show the result of inserting 37 into the following AVL tree:

**Grading (6 points for part a):**

6/6 for correct answer.

3/6 for something reasonably close. (Use your judgment. However, 84 must be the root in order for them to earn these points.)

0/6 otherwise.

b) Using big-oh notation, give the **best-case** runtime for inserting a new element into an AVL tree with n nodes:**Solution:** $O(\log n)$ **Grading:** 1 point if correct, 0 otherwisec) Using big-oh notation, give the **worst-case** runtime for inserting a new element into an AVL tree with n nodes:**Solution:** $O(\log n)$ **Grading:** 1 point if correct, 0 otherwised) Using big-oh notation, give the **best-case** runtime for inserting a new element into a binary search tree with n nodes:**Solution:** $O(1)$ **Grading:** 1 point if correct, 0 otherwisee) Using big-oh notation, give the **worst-case** runtime for inserting a new element into a binary search tree with n nodes:**Solution:** $O(n)$ **Grading:** 1 point if correct, 0 otherwise