CSCI 432 - Assignment G4

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Question A: Solve the following recurrences:

a) Show that $T(n) = T(n-1)+n$ is $O(n^2)$ using the substitution method.

b) Use a recursion tree to determine a good asymptotic upper bound for $T(n) = T(n/2) + n^2$.

c) Use the master method to solve $T(n) = 2T(n/4) + 1$

d) Use the master method to solve $T(n) = 2T(n/4) + \sqrt{n}$

e) Use the master method to solve $T(n) = 2T(n/4) + n$

Question B: Consider the randomized algorithm to compute the smallest enclosing ball. Consider the example set in the figure included on the assignment sheet. Suppose that the 'random' choice of vertex always chooses such that the vertex has the smallest index. What are the return values of each recursive call?