

Faculty of Science

**Course**: CSCI 3070U: Design and Analysis of Algorithms

**Tutorial:** #3

**Topic:** Solving recurrences

1. Use the master method to determine a tight bound for the following recurrences:
   1. T(n) = T(n/2) + n
   2. T(n) = 27T(n/3) + lg n
   3. T(n) = 9T(n/3) + n2
2. Write the recursion tree for the binary search algorithm.
3. Use substitution to prove that T(n) = 4T(n/2) – 1 is O(n2) (Note: Big-O, not Big-Theta)