Algorithms Homework 2*

Recurrences

Reading: GT Chapter 4.1, 4.3

Using iteration, find a tight bound for the solution of the following recurrences:

1. $T(n) = T(n/3) + 1$
2. $T(n) = T(n/3) + n$
3. $T(n) = T(\sqrt{n}) + 1$
4. $T(n) = T(n-1) + n$
5. $T(n) = 7T(n/2) + n^3$
6. $T(n) = 7T(n/2) + n^2$

Using substitution, prove an upper bound for the solution of the following recurrences:

7. $T(n) = T(n/10) + n$
8. $T(n) = 5T(n/5) + n$

*Collaboration is allowed, even encouraged, provided that the names of the collaborators are listed along with the solutions. Write up the solutions on your own.