Algorithm
Due Date: 9:20AM, November 1
Autumn, 2012
The following problem sets are all from CLRS.

Homework 4

1. We saw that the solution of $T(n) = 2T(\lfloor n/2 \rfloor) + n$ is $O(n \lg n)$. Show that the solution of this recurrence is also $\Omega(n \lg n)$. Conclude that the solution is $\Theta(n \lg n)$.

2. Use a recursion tree to determine a good asymptotic upper bound on the recurrence $T(n) = 3T(\lfloor n/2 \rfloor) + n$. Use the substitution method to verify your answer.

3. Use the master method to give tight asymptotic bounds for the following recurrences.

   a. $T(n) = 4T(n/2) + n$.

   b. $T(n) = 4T(n/2) + n^2$.

   c. $T(n) = 4T(n/2) + n^3$.