COMP 2711 Discrete Mathematical Tools for CS
2014 Fall Semester – Written Assignment # 9
For self-practice. No need to hand in.

At the top of your solution, please write your (i) name, (ii) student ID #, (iii) email address and (iv) tutorial section.

Some Notes:

- Please write clearly and briefly. For all questions you should also provide a short explanation as to *how* you derived the solution. That is, if the solution is 20, you shouldn't just write down 20. You need to explain *why* it's 20.
- Please follow the guidelines on doing your own work and avoiding plagiarism given on the class home page. Don't forget to *acknowledge* individuals who assisted you, or sources where you found solutions.
- Some of these problems are taken (some modified) from the textbook.
- Please make a *copy* of your assignment before submitting it. If we can't find your paper in the submission pile, we will ask you to resubmit the copy.
- Your solutions should be submitted before 5PM, in the collection bin in front of Room 4213A.

Problem 1: Consider a function $T(n)$ defined on integers n that are powers of 2. Suppose

$$T(1) = 1, \quad T(n) = 3T(n/2) + n^2.$$

Iterate the recurrence or use a recursion tree to find a closed-form expression for $T(n)$. Simplify the closed-form expression using the big Θ notation.