ECS 122A – Algorithm & Analysis
Homework 02

Due: Sunday, October 10, 2021, 11:59pm PT

Note:

- Identify the corresponding pages for each question according to the outline on Gradescope.
- If you handwrite your solutions, make sure they are clear and readable.

Prove or disapprove the time complexity guess for each of the following recurrences using the subsitution method.

1. $T(n) = T(n-1) + n$ is $O(n^2)$
2. $T(n) = T(n/2) + 1$ is $O(logn)$
3. $T(n) = T(n/2) + n^2$ is $O(nlogn)$
4. $T(n) = 3T(\frac{n}{2}) + n$ is $O(n^{log3})$
5. $T(n) = T(n-1) + T(\frac{n}{2}) + n$ is $O(n2^n)$