CPS 130 Homework 3
Summations and Recurrences

- due Tue May 21st -

Write and justify your answers in the space provided.[1]

1. (CLRS 3-2) (a) and (b) only.

2. (CLRS A.1-1) Find a simple formula for $\sum_{k=1}^{n}(2k-1)$.

[1]Collaboration is allowed, even encouraged, provided that the names of the collaborators are listed along with the solutions. Students must write up the solutions on their own.

3. Prove by induction that $\sum_{i=1}^{n} i^2 = \frac{n(n+1)(2n+1)}{6}$.

4. Solve the recurrence: $T(n) = \begin{cases} 1 & \text{if } n = 1 \\ T(n-1) + n(n-1) & \text{if } n \geq 2 \end{cases}$

Hint: use $\sum_{i=1}^{n} i^2 = \frac{n(n+1)(2n+1)}{6}$.