Homework 1   CS 237   Kutztown

Topic: Analysis, Testing
Points: 10
Due: TBA in class. Submit to the Homework 1 D2L dropbox

Find a recurrence for each of the following sequences. Solve them and then prove that your closed form solution is correct by performing an inductive proof. **You MUST show ALL work**. The proof must show proof of the base case, the assumption, what must be shown, and progression from start to finish.

SIGNIFICANT PENALTIES FOR TAKING SHORTCUTS.

1. Solve and then prove that your closed form solution is correct by performing an inductive proof.
   ```
   Sₙ={1, 4, 8, 13, 19, …}
   ```
   $S_n = \{1, 4, 8, 13, 19, \ldots\}$
   ```
         start with subscript 0, i.e. Base Case: T₀ = 1
   ```
   start with subscript 0, i.e. Base Case: $T_0 = 1$

2. Find a closed form solution. Extra credit (4 points): Perform an inductive proof.
   $S_n = \{1, 8, 36, 148, 596, \ldots\}$
   start with subscript 1, i.e. Base Case: $T_1 = 1$

Submit your solution in the Homework 1 D2L box. The extra credit may cause the percentage in this area to go above the percentage of grade. That overage will be permitted to bleed to deficiencies in other grading areas.

Handwritten submissions MUST be readable.

Suggestion: Here's a table for each of these:

1.

n	T_n
0	1
1	4
2	8
3	13
4	19

2.

n	T_n
1	1
2	8
3	36
4	148
5	596