Problem 1:

T(n)=T(n1)+cn if n>1 and T(1)=c

n	T(n)
1	C = 1C
2	C + 2C = 3C
3	3C + 3C = 6C
4	6C + 4C = 10C
5	10C + 5C = 15C
6	15C + 6C = 21C

The values 1, 3, 6, 10, 15, 21... are so-called triangular numbers and can be modeled by:

$$T(n) = C(\frac{n(n+1)}{2})$$

In order to find the complexity of $T(n)$ we can simplyfy the right-hand side of the above equation to:

$$T(n) = C(\frac{n^2+n)}{2})$$

Dropping constants and lower order terms, we can conclude that the complexity of $T(n)$ is:

$$\theta(n^2)$$