HW5

Problem 1:

Following the Master's Theorem:

1. $T(N) = 2T(N-1) + 1 \longrightarrow \Theta(2^n)$
2. $T(N) = 3T(N-1) + n \longrightarrow \Theta(n3^n)$
3. $T(N) = 9T(N/2) + n^2 \longrightarrow \Theta(n^{\log_2(9)})$
4. $T(N) = 100T(N/2) + n^{\log_2(n+1)} \longrightarrow \Theta(n^{\log_2(n+1)})$
5. $T(N) = 4T(N/2) + n^2 \log n \rightarrow \Theta(n^2 \log^2 n)$
6. $T(N) = 5T(N/2) + \frac{n^2}{\log n} \longrightarrow \Theta(n^{\log_2 5})$

Problem 2: $T(N) = 2T(N/2) + n \rightarrow \Theta(n \log n)$