1. Solve the following recurrence relation:
   \[ T(1) = 1 \]
   \[ T(n) = 6 \cdot T \left( \frac{n}{6} \right) + 2n + 3 \]
   
   Hint: \[ \sum_{k=0}^{n} x^k = \frac{x^{n+1}-1}{x-1} \], thus, \[ \sum_{i=0}^{k-1} 6^i = \frac{6^{k-1}}{6} \], if \( n = 6^k \) then \[ \sum_{i=0}^{k-1} 6^i = \frac{n-1}{5} \]

2. Give a recurrence relation and use the Master Method to find the complexity of a recursive algorithm that divides a problem into 5 parts, each of which has 1/4 of the input data, and takes \( N-3 \) steps to subdivide the problem and combine the solutions.

Questions 3 and 4 on reverse side →
3. Use the Master Method to solve the recurrence relation \( T(N) = 9 \ T(N/4) + N^2 \).

4. Use the Master Method to solve the recurrence relation \( T(N) = 3T(N/2) + N \).