

1. List and explain the steps used to analyze the time complexity of a recursive algorithm (provide as much detail as possible).
2. Consider the following recurrence relation.

$$T(n) = \begin{cases} 2 & \text{if } n = 0, 1 \\ T(\lfloor \frac{2n}{3} \rfloor) + \log n & \text{if } n > 1 \end{cases}$$

Find upper and lower bounds on the value of $T(n)$, using the Master Theorem. Then try to find a tight bound.