
Mathematical Analysis of Algorithms

Homework #2

Due Date:

Reading Assignment: 2.3–2.7

Problems:

1. 2–15

2. 2–21

3. 2–24

4. Evaluate $\sum_{1 \leq k \leq 2^n - 1} k \lceil \lg k \rceil$

5. Consider the expansion

$$\begin{aligned} & (1 - a)(1 - b)(1 - c)(1 - d) \cdots \\ & = 1 - a - b + ab - c + ac + bc - abc - d + \cdots \end{aligned}$$

What is the sign of the n -th term?

(**Hint:** the answer has something to do with the number of ones in the binary expansion of n .)

6. 3–40(a)