18. 10. 2021

Homework Assignment 2

Data Structures and Algorithms I, WT 2021

Due: 29. 10. 2021

Solve the following recurrences using backward substitution (iteration method) to get asymptotic bounds on the running times (bounds should be as sharp as possible; in each case we have $T(n) = O(1)$ for $n \leq 2$).

1. (4 Points) $T(n) = aT(\frac{n}{a}) + n^b$ with $a, b \in \mathbb{N}_{\geq 2}$.
2. (5 Points) $T(n) = T(n-2) + \log n$
3. (5 Points) $T(n) = T(\sqrt{n}) + \Theta(\log_2 \log_2 n)$.
   Hint: Use the substitution method (change of variables) introduced in the tutorial.