Reference

Nothing written on this page will be graded.

Logs

$$x^{\log_x(n)} = n$$
$$\log_a(b^c) = c \log_a(b)$$
$$a^{\log_b(c)} = c^{log_b(a)}$$
$$\log_b(a) = \frac{\log_d(a)}{\log_d(b)}$$

Asymptotic Notation

$f(n)$ is $O(g(n))$ provided that after some input size n_0, $f(n) \geq c \cdot g(n)$ for some constant c.

$f(n)$ is $\Omega(g(n))$ provided that after some input size n_0, $f(n) \leq c \cdot g(n)$ for some constant c.

$f(n)$ is $\Theta(g(n))$ provided that $f(n)$ is $O(g(n))$ and $f(n)$ is $\Omega(g(n))$

Master Theorem

Suppose that $T(n) = aT(\frac{n}{b}) + O(n^k)$ for $n > b$. Then:

– if $a < b^k$ then $T(n)$ is $O(n^k)$

– if $a = b^k$ then $T(n)$ is $O(n^k \log n)$

– if $a > b^k$ then $T(n)$ is $O(n^{\log_b a})$

Proposer Optimality / Receiver Pessimality

A pair (p, r) is a valid pair if there is some stable matching where they are matched together

Proposer Optimality: Every proposer is matched with their most preferred valid pair.

Receiver Pessimality: Every receiver is matched with their least preferred valid pair.

