Recitation 7

Checkpoint 0

$$O(1) = O(4) \subset O(\log(\log(n))) \subset O(\log(n)) \subset O(\log^2(n)) \subset O(n) = O(4n+3)$$
$$\subset O(n\log(n)) \subset O(n^2) = O(n^2 + 20000n + 3) \subset O(2^n) \subset O(n!)$$

Checkpoint 1

记 $f(n) = n^3 + 300n^2$，$g(n) = n^3$，则 $\lim_{n\to\infty} \frac{f(n)}{g(n)} = 1$，可令 $c = 2$，$n_0 = 301$，使得 $f(n) \leq c * g(n)$成立

Checkpoint 2

$\exists c, n_0, s.t. \forall n > n_0, f(n) \leq c * g(n)$，又因为 $k > 0$，则 $k * f(n) \leq k * c * g(n)$，令 $c' = k * c > 0$，$n_0' = n_0$，可使定义成立