1. remove lower terms

2. remove coefficients

Time Complexity
Asymptotic Analysis

$5000n + 605$ Linear

$g: 25n + 5$ $f \in O(n)$

$f: \boxed{12n + 6}$

$c = 1$
$n_0 = 2$

Big O Notation

Set Notation

$f \in O(g)$ iff and only if
there exists $c > 0$, $b > 0$

$n \geq n_0$
for all n

$f(n) \leq c \cdot g(n)$

g is Upper Bound on f

$(12n + 6) \leq (25n + 5) \cdot 1$

$24 + 6 \leq 55$

$\frac{30}{30} \leq \frac{55}{55}$

$12n + 6 \in O(25n + 5)$

W
≤ 13
$n_0 = 1$

10

$O_{(n)}$

$R(n$
$c = 1$
$n_0 = 5$

$12n + 6 > n$

$18 > 1$

$12n + 6 \leq 13n$

$18 \quad 13$

$30 \quad 26$

$126 \leq 130$

Constant

$f \in O(1)$

Big $\Omega(n)$ omega

$f \in \Omega(g)$ iff

$\exists c > 0, n_0 > 0, f(n) \geq g(n)$

$\forall n \geq n_0$

$\boxed{3n^2 - 5n + 17} \in O(n)$

Quadratic $\in O(n^2)$

$12n + 5 \in O(n^2)$

$12n + 5 \in \Omega(1)$

$\hookrightarrow \in \Omega(n)$

$\hookrightarrow \in O(n)$

$\Theta(n)$ upper
lower c, n_0

theta

$12n + 5 \in \Theta(n)$

order of n

Linear

$\Theta(n!)$

$O(2^n)$

$\leq (n^4)$