Asymptotic Notation or Function Grow

$$1 < \log n < \sqrt{n} < n < n \log n < n^2 < n^3 < \dots < 2^n < 3^n < \dots < n^n$$

Big-oh ---- Upper bound

Big-omega ----- Lower bound

Theta ----- Average bound

Big-Oh

The function
$$f(n)=O(g(n))$$
 iff \exists +ve constant c and n .

Such that $f(n) \leq c * g(n) \forall n \geq n$.

 $cg: f(n)=2n+3$ $f(n) \leq c * g(n)$ $f(n)$ $cg(n)$ $cg(n)$

Big-Oh

The function
$$f(n)=O(g(n))$$
 its $\exists + ve \text{ constant}$

$$c \text{ and } n_o$$
such that $f(n) \leq (*g(n) \forall n \geq n_o)$

$$cg: f(n)=2n+3 \qquad \qquad ::f(n)=O(n)$$

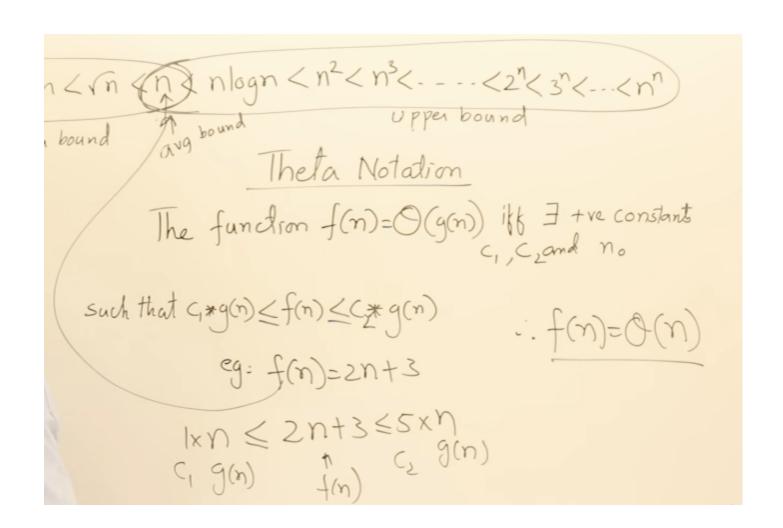
$$2n+3 \leq$$

Big-Oh The function f(n)=O(g(n)) its \exists +ve constants \in and \in such that $f(n) \leq (*g(n)) + n \geq n$. $cg: f(n)=2n+3 \qquad :: f(n)=O(n)$ $2n+3 \leq 2n+3 \leq n$ $2n+3 \leq 5n^2 \quad n \geq 1$

$$g: f(n)=2n+3$$
 $2n+3 \le 2n^2+3n^2$
 $f(n)=O(n)$
 $f(n)=O(n^2)$
 $f(n)=O(2n)$
 $f(n)=O(2n)$
 $f(n)=O(2n)$

The function $f(n)=\Omega(g(n))$ its $\exists + ve \text{ constants}$ $c \text{ and } n_o$ such that $f(n) \geq c * g(n) \forall n \geq n_o$ eq: f(n) = 2n + 3 $2n + 3 \geq 1 \times n \forall n \geq 1$

In $\langle n \rangle$ n $| \log n \langle n^2 \langle n^3 \rangle - - \langle 2^n \langle 3^n \langle - \langle n^n \rangle \rangle$ The function $f(n) = \Omega(g(n))$ its $\exists + \forall e \text{ constant}$ $c \text{ and } n_o$ Such that $f(n) \geq (*g(n)) \forall n \geq n_o$ $eg = f(n) = 2n + 3 \longrightarrow f(n) = \Omega(n)$ $2n + 3 \geq |x \log n \forall n \geq 1 - f(n) = \Omega(n^2)$



https://www.youtube.com/watch?v=A03oI0znAoc