"Big O"

$f(x) \in O(g(x))$

Means $|f(x)| \leq c\,|g(x)|$ for $x > k$, $c, k > 0$

"Big Ω"

$f(x) \in \Omega(g(x))$

Means $|f(x)| \geq c\,|g(x)|$ for $x > k$, $c, k > 0$.

Example: showing Big-O does not hold.

e.g. Show n^2 is not $O(n)$

* Must show no witnesses (c, k) exist s.t. $n^2 \leq cn$ for $x > k$.

Want $n^2 \leq cn$

Dividing bothsides by n $n \leq c$

But c is a constant and $n \to \infty$

So in the limit $n \to \infty$, $n > c$.

(i.e. c would have to be a function for $c \geq n$, but c is restricted to being a constant.)