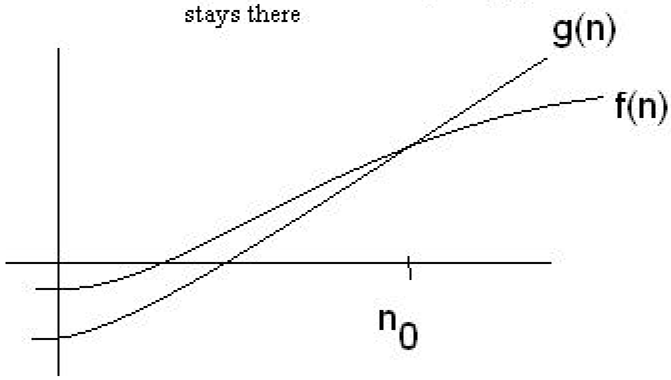
Below are the mathematical descriptions of the different asymptotic notations.

I hope this helps.

$f(n) \in O(g(n))$ iff for some $c > 0$, $n_0 > 0$:

$$|f(n)| \leq c * g(n) \quad \text{for some } n \geq n_0$$

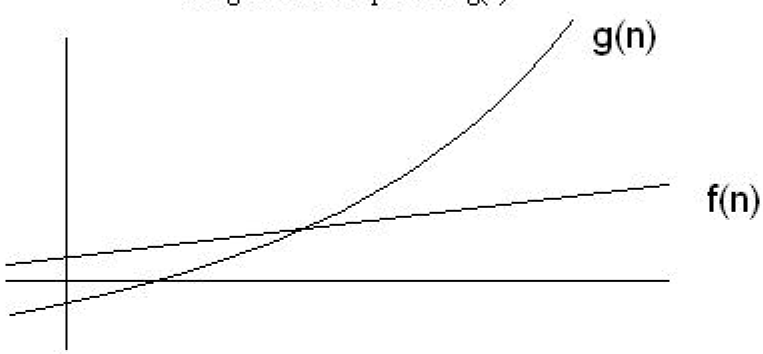
That is, at some point during f(n), g(n) becomes at least as large as f(n), and stays there



$f(n) \in o(g(n))$ iff

$$\lim_{n \to \text{inf}} \frac{f(n)}{g(n)} = 0$$

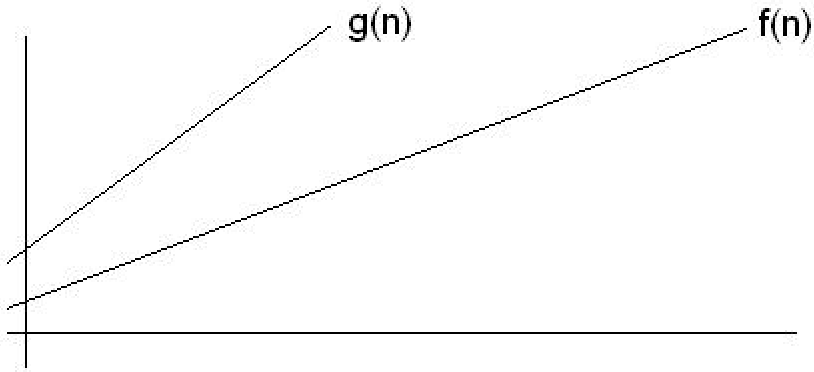
That is, as n approaches infinity, f(n) is insignificant compared to g(n):



$f(n) \in \Theta(g(n))$ iff

$$f(n) \in O(g(n)) \text{ and } g(n) \in O(f(n))$$

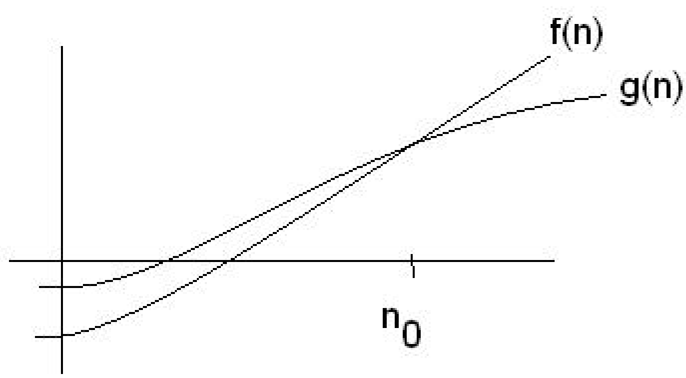
That is, g(n) and f(n) differ only by a constant
or some other lower order terms.
For example, f(n) = n/2 and g(n) = n…



$f(n) \in \Omega(g(n))$ iff

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

See O notation for more
clarification



$f(n) \approx g(n)$ iff

$$\lim_{n \to \infty} \frac{f(n)}{g(n)} = 1$$

That is, f(n) and g(n) are equivalent
for large n.
For example:

$$f(n) = n^2 + \frac{1}{n}$$

$$g(n) = n^2$$

As n approaches infinity,
1/n approaches 0;
so f(n)/g(n) approaches 1.