Prove that $O(g(n)) \cap \omega(g(n))$ is the empty set.

A: ∵ at the definition of $O(g(n))$:

$$f(n) \leq c_1 . g_1(n)$$

∵ at the definition of $\omega(g(n))$:

$$f(n) > c_2 . g_2(n)$$

∴ $O(g(n))$ and $\omega(g(n))$ doesn't have any common elements

∴ $O(g(n)) \cap \omega(g(n))$ is the empty set #
