The important issue is the logic you used to arrive at your answer.

1. Consider the functions \( f \) and \( g \) defined on \( \mathbb{N} \) by
   \[
   f(n) = \begin{cases} 
   n^2 & \text{for } n \text{ even} \\
   2n & \text{for } n \text{ odd}
   \end{cases}
   \]
   and \( g(n) = n^2 \). Show that \( f = \Omega(g) \) but that \( f \neq o(g) \) and \( g \neq O(f) \).

2. Display a function \( f: \mathbb{N} \to \mathbb{R} \) that is \( O(1) \) but is not constant.
3. Define the relation "\( \leq \)" on functions from \( \mathbb{N} \) into \( \mathbb{R} \) by \( f \leq g \) if and only if \( f = O(g) \). Prove that \( \leq \) is reflexive and transitive. (Recall: to be reflexive, you must have \( f \leq f \) for all functions \( f \); to be transitive, you must have that \( f \leq g \) and \( g \leq h \) implies \( f \leq h \) for all functions \( f, g, \) and \( h \).)