3) $2^{n+1} \rightarrow \Theta(2^n)$

substitute constant a, arbitrarily chosen (but is a positive integer)

O. Yes, by defn. of exponents, a^{n+1} is equal to $a \cdot a^n$, so the inequality $a \cdot a^n \leq c \cdot a^n$ for any $c > a$. So, $\exists c$ s.t $\forall a\ (a^{n+1} \geq c \cdot a^n)$

Ω. Yes, Again by defn. of exponents, a^{n+1} is equal to $a \cdot a^n$, so the inequality $a \cdot a^n \geq c \cdot a^n$ for any $c < a$.
So, $\exists c$ s.t $\forall d\ (a^{n+1} \geq c \cdot a^n)$

Θ. $2^{n+1} \in O(2^n) \wedge 2^{n+1} \in \Omega(2^n) \longrightarrow 2^{n+1} \in \Theta(2^n)$