for all $n \geq$ ____, $1000n^3 \leq$ ____n^3, so $g \in O(f)$

for all $n \geq$ ____, $1000n^3 \leq$ ____n^3, so $g \in \Omega(f)$

a. $g(n) = 1000n^3$
   for all $n \geq 1$, $1000n^3 \leq 1001n^3$, so $g \in O(f)$
   for all $n \geq 1$, $1000n^3 \leq 999n^3$, so $g \in \Omega(f)$

b. $g(n) = n^3 + 100n^2$
   for all $n \geq 1$, $1000n^3 \leq 1001n^3$, so $g \in O(f)$
   for all $n \geq 1$, $1000n^3 \leq 999n^3$, so $g \in \Omega(f)$

c. $g(n) = n^3 - 1000n^2$
   for all $n \geq 1000$, $1000n^3 \leq 1n^3$, so $g \in O(f)$
   for all $n \geq 1001$, $1000n^3 \leq \frac{1}{1001}n^3$, so $g \in \Omega(f)$