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1. $F(n) = \Omega(g(n))$ implies $g(n) = O(f(n))$

Answer: True

By definition

$f(n) = \Omega(g(n))$ which implies $0 \leq c \cdot g(n) \leq f(n)$

$g(n) = O(f(n))$ which implies $0 \leq g(n) \leq c \cdot f(n)$

Let us assume that $f(n) = 100n^2$, $g(n) = n^2$

$f(n) \geq c \cdot g(n)$

$100 \cdot n^2 \geq c \cdot n^2$

Consider the constant $c = 50$

$100n^2 \geq 50n^2$

$2 \geq 1$

$g(n) = O(f(n))$ which is equal to

$c \cdot f(n) \geq g(n)$

$c \cdot 100 \cdot n^2 \geq n^2$

$50 \cdot 100 \cdot n^2 \geq n^2$

$5000 \geq 1$

Based on the above equations $F(n) = \Omega(g(n))$ implies $g(n) = O(f(n))$ is true.