

CS 483
Homework 1
due Wednesday, June 10

1. Prove, from the definition of Ω , that $5n^2 + \sqrt{n} \in \Omega(n^2)$.
2. Prove, from the definition of Θ , that $3n^3 + 4n^2 + 2 \in \Theta(n^3)$.
3. Prove transitivity for O . That is prove:
If $f(n) \in O(g(n))$ and $g(n) \in O(h(n))$ then $f(n) \in O(h(n))$.
4. Use the limit theorem (and show your limit computation) to answer each part below about the function $f(n) = n \times \ln(n)$.
 - a) $f(n) \in O(n)$
 - b) $f(n) \in \Omega(n)$
 - c) $f(n) \in \Theta(n)$