CSci 3501 Assignment 1
Due Friday, September 5 in class

Problem 1 (6 points). For each of the following statements please say if it is true or false and explain your answer.

- \( n^2 + 5n + 3 \in o(n^3) \)
- \( n^2 + 5n + 3 \in \omega(n^2) \)
- \( n^2 + n \log_2 n \in O(n^2) \)
- \( n + n \log_2 n \in O(n) \)
- \( 5n + 2 \in \Theta(1) \)
- \( 3\log_2 n \in \Theta(\log_2 n) \)

Problem 1 (6 points).

- Prove the following: if \( f(n) \in O(g(n)) \) and \( g(n) \in O(h(n)) \) then \( f(n) \in O(h(n)) \).
- Prove the following: if \( g(n) \in o(f(n)) \) then \( f(n) + g(n) \in \Theta(f(n)) \).