**Homework 4 Questions**

# **Problem 1**: (15 points) (Exercise 7.1) Answer each part TRUE or FALSE (Big ).

* True: As , any input we want, we can always find a constant such that . For example, consider and ,

*for all*

* False: Since grows faster than , dominates the growth of . Therefore, cannot be bounded by , making false.
* True: According to the book, when the symbol occurs in an exponent, as in the expression , the exponent dominates the expression, thus representing an upper bound of . This means that is an upper bound for , and , we have . Hence, we can conclude that .

# **Problem 2**: (15 points) (Exercise 7.2) Answer each part TRUE or FALSE (Small ).