**JIE MEI z5173405**

**Question5**

1. **Using we obtain because f(n) and g(n) has same asymptotic growth rate.**
2. **We want show that ,that means that we have to show that for some positive c and all sufficiently large n.** **But, since the log function is monotonically increasing, this will hold just in case**

**Which holds just in case**

**We now take c = 1 show that**

**Which equivalent to showing that**

**To this end we use the L’Hˆopital’s to compute the limit =**

**Because then, for sufficiently large n we will have .**

1. **We want to show that not true for f(n) = O(g(n)) or g(n) = O(f(n)). we will log the f(n) and g(n) function show that**

**If n is even number, f(n)=2\*log(n). If n is odd number, f(n) = 0. So, it is not true that for every two functions f(n) and g(n) either f(n) = O(g(n)) or g(n) = O(f(n)).**