**Numerical Computation – Assignment 2**

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1. **and , m < k.**

**, .**

**Because k>m and for all h sufficiently small which means that h is smaller than 1, so ,**

**2.**

**Method1:**

**The Taylor’s polynomial of the f(h) is:**

**()**

**Taylor expansion of the function, the series after the third order is 0. The is not in.**

**Method2:**

**for h sufficiently small, so h is close to the zero.**

**If the upper bound of the is , then we have the:**

**, and we know that the h is sufficiently small. So, which means that we cannot find a constant to make always be larger than or equal to the .**

**To conclude, the .**

**3.**

**When x is very large, and even approaching positive infinity, is approaching 0.**

**4. let**

**.**

**The Taylor’s series of the f(x) at order 6 is:**

**. Let a=0 and we can get:**

**=**

**(5)**

**According to the root finding formula, the root of the function is .**

**We can find that , one of roots is:**

**.**

**Another root is:**

**.**