MATH 16B - WORKSHEET 9

1

i Without referring to you notes or the textbook, state the Integral Test.

ii Without referring to you notes or the textbook, state the Comparison Test.

iii Let k be any real number. For what values of k does $\sum_{n=1}^{\infty} \frac{\ln n}{n^k}$ converge?

2 Determine whether the following series converge or diverge

i $\sum_{k=1}^{\infty} \frac{1}{\sqrt{k^2+1}}$

ii $\displaystyle\sum_{k=1}^{\infty} \frac{1}{\sqrt[5]{k}}$

iii $\displaystyle\sum_{k=0}^{\infty} k^3 e^{-k^4}$

iv $\displaystyle\sum_{k=0}^{\infty} \frac{k^2}{1+k^3}$

v $\displaystyle\sum_{k=3}^{\infty} \frac{1}{(k-2)4^k}$

3 Let $n \geq 0$ be any real number. For what values of n does $S_n := \displaystyle\sum_{j=0}^{\infty} \frac{4}{5+n^j}$ converge?