

136.271

Assignment 2 (Sections 9.3, 9.4 and 9.5)

DUE FEBRUARY 24, MONDAY CLASS

TWO CORRECTIONS EMPHASIZED IN RED

1. [9 marks]

(a) Use the Integral Test to test if the series $\sum_{n=1}^{\infty} ne^{-n^2}$ converges. Do not forget to check that the Integral Test is applicable before you apply it.

(b) Use the Comparison Test to determine if $\sum_{n=1}^{\infty} \frac{1}{1 + \sqrt{n}}$ converges.

(c) Use the Limit Comparison Test to determine if $\sum_{n=1}^{\infty} \frac{n^2 + \sqrt{n}}{n^4 + \sqrt{n}}$ converges.

2. [9 marks] Check if the following series is absolutely convergent, conditionally convergent or divergent.

(a) $\sum_{n=1}^{\infty} \frac{(n+1)(-5)^n}{n3^{2n}}$

(b) $\sum_{n=2}^{\infty} \left(\frac{n+1}{n^2-n} \right)^n$ (n=1 in the sum in the handout now **changed to n=2**)

(c) $\sum_{n=1}^{\infty} \frac{(-1)^n}{\sqrt[3]{n^2+1}}$

3. [7 marks] Find the center of convergence, the radius of convergence, and the interval of convergence of the following series.

(a) $\sum_{n=1}^{\infty} nx^n$

(b) $\sum_{n=1}^{\infty} \frac{n}{4^n} (2x-1)^n$ (**2x-1 is up in the numerator**)