MATH 1953 Written Homework 8 (due Wednesday, May 29th at the BEGINNING of class!)

Please write solutions to these problems on separate sheet(s) of paper (i.e. don't print and write on this assignment.)

1. Suppose a student is able to correctly show that a series $\sum_{n=1}^{\infty} a_n$ converges using the Root Test. Explain why that student should be able to conclude that the series $\sum_{n=1}^{\infty} na_n$ converges as well.

2. For each of the series from problems #11-19 in the Chapter 11 Review Problems in your textbook (the first one should be the sum of $\frac{n}{n^3+1}$), indicate which convergence test (or tests; some may require more than one!) you would use to determine whether the series converges or diverges. If using Comparison/Limit Comparison Test, indicate what series you would compare to.

  You DO NOT need to show the work of applying the test to conclude convergence/divergence. However, you should convince yourself on scratch paper that the test you want would actually yield an answer, as you'll only receive credit for tests that could successfully be applied.

3. What is the radius of convergence R of the power series $\sum_{n=1}^{\infty} \frac{n^n}{n!}x^n$, i.e. the value of R so that the series converges for all x with $|x| < R$ and diverges for all x with $|x| > R$?