Mat 1322 3X – Summer 2007 – Homework #5.

To hand in Thursday, July 12th.

Question 1. (6 points) For each of the following power series, find the radius and the interval of convergence:

$$(1) \quad \sum_{n=1}^{\infty} \frac{n^2(x-5)^n}{3^n} \qquad\qquad (2) \quad \sum_{n=1}^{\infty} \frac{4^n}{\sqrt{n}} x^n$$

Question 2. (8 points) Find the Taylor expansions about 0 of the functions f and g. Write the series under the $\sum$ form, and write down the 6 first non-zero terms.

$$f(x) = \frac{x^3}{(1+x)^2} \qquad\qquad g(x) = x^3 \arctan(x^2)$$

Use the result to compute the values of $f^{(3)}(0)$ and $g^{(5)}(0)$.