

MA 2733

Worksheet 5 – October 11, 2016

Name _____

1. Consider the power series $f(x) = \sum_{k=0}^{\infty} \frac{1}{(2k)!} \cdot x^{2k}$:

(a) What are the coefficients of 1 , x , x^2 , and x^3 ?

(b) On what interval does the power series converge?

(c) Calculate $f(0)$.

2. Find the derivative (with respect to x) of the power series $\sum_{n=0}^{\infty} 3^n x^n$.

3. Find the radius and interval of convergence of the power series $\sum_{n=0}^{\infty} \frac{e^n}{n^2 + 2} \cdot x^n$.

4. (*) Find the radius (but not the interval) of convergence for the power series $\sum_{n=0}^{\infty} \frac{n^n}{n!} \cdot x^n$.
Hint: this is closely related to an example we discussed in lecture!