MA 2733

Worksheet 6 / Review – October 18, 2016

Name ____________________________

1. Find a power series representation for $\ln(3+x)$.

2. Find a power series representation for $\dfrac{1}{(1-x)\cdot(1-2x)}$.

3. Using the fact that $e^x = \sum_{n=0}^{\infty} \frac{1}{n!} \cdot x^n$, find a power series representation for e^{x^2}.

Review of main topics for Exam 2

Chapter 11

$$\text{series convergence} — \begin{cases} \text{Direct Comparison Test (DCT)} \\ \text{Ratio Test (RT)} \\ \text{Alternating Series Test (AST)} \\ \text{absolute convergence} \end{cases}$$

(*remember that the AST doesn't give absolute convergence*)

power series — interval and radius of convergence

$$\text{power series operations} — \begin{cases} \text{"plug in"} \; -x, x^2, \text{ etc} \\ \text{addition} \\ \text{multiply by } x, x^2, \text{ etc} \\ \text{differentiate} \\ \text{integrate} \end{cases}$$

Using power series operations to represent functions as power series.

Proofs, explanations, and derivations that are fair game
rearranging conditionally convergent series to add to 17 (or any other number)
derivative of $\sum c_n x^n$
integral of $\sum c_n x^n$
basic cases of Taylor Coefficient Theorem