

MA 2733

Worksheet 11 – December 2, 2013

Name \_\_\_\_\_

1. Using power series operations, find the Taylor series (centered at 0) for  $\int \frac{1}{\sqrt{2\pi}} e^{-x^2/2} dx$ .

(You may recognize  $\frac{1}{\sqrt{2\pi}} e^{-x^2/2}$  as the standard normal “bell” curve from statistics. Finding the area under the bell curve is of great practical importance.)

2. By taking derivatives and plugging in the appropriate number, find the Taylor series centered at  $a = 2$  for  $f(x) = e^x$ .

3. Using power series operations, find the Taylor series (centered at 0) for  $\frac{8x + 4}{x^2 - 4}$ .

4. Find the Taylor series (centered at 0) for  $f(x) = \cos x$ :

- (a) by taking derivatives and plugging in, and
- (b) using power series operations.