Math 132
Quiz 6 – April 24, 2012

Name _____

Total of 11 points. 10 points is considered a perfect score.

1. (3 points) Give Taylor series (around 0) for each of the following three functions:

$$\frac{1}{1-x}, \qquad e^x, \qquad \cos x.$$

2. (5 points) Find a Taylor series (around 0) for the function $2x^3 e^{\frac{1}{2}x^2}$.
   Hint: use operations on power series!

(See back)

3. (3 points) Using the Taylor Remainder bound, explain why the Taylor series for e^x around 1 is a power series representation for e^x on the interval $(-1, 3)$.

   Reminder: The Taylor Remainder bound says (roughly) that

$$|f(x) - P_n(x)| \leq \frac{M_n |x-a|^{n+1}}{(n+1)!}, \text{ where } M_n \text{ is an upper bound for } f^{(n+1)}(x).$$