PRACTICE9 Name_____ Section_____

1. Determine the Taylor Series of the function.

   (a) $f(x) = \sin(x)$ about $x = 0$

   (b) $f(x) = \sin(x^2)$ about $x = 0$

   (c) $f(x) = x^2 \sin(x^2)$ about $x = 0$

   (d) $f(x) = \int x^2 \sin(x)\, dx$

   (e) $f(x) = xe^{-x^3}$ about $x = 0$

   (f) $f(x) = \int xe^{-x^3}\, dx$ about $x = 0$

   (g) $f(x) = \ln(x)$ about $x = 1$

   (h) $f(x) = \int \dfrac{\ln x}{x-1}\, dx$

   (i) $f(x) = \sqrt{x}$ about $x = 4$

   (j) $f(x) = \cos(3x)$

   (k) $f(x) = x^2 \cos(3x)$

2. Determine a series to give the following evaluation. Write out the first four terms to approximate this evaluation..

   (a) $\int_0^1 x^2 \sin(x^2)\, dx$

   (b) $\int_0^1 xe^{-x^3}\, dx$

   (c) $\int_0^1 e^{-x^2}\, dx$

3. Determine the sum:

   (a) $\sum_{n=0}^{\infty} \frac{3^n}{n!}$

   (b) $\sum_{n=0}^{\infty} -\frac{2^n}{3^n \cdot n!}$

   (c) $\sum_{n=0}^{\infty} \frac{3}{2^n \cdot n!}$

   (d) $\sum_{n=0}^{\infty} \frac{(-1)^n}{(2n)!}$

   (e) $\sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)!}$