Math 10360 – Activity 6 – Spring 2007

Name: _____ Date: April 26, 2007

(1) Determine whether the following sequences converge or diverge. Various tests may work, but restrict yourselves to using only the root test, ratio test, or the alternating series test.

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

(b) $\sum_{n=1}^{\infty} \frac{n^n}{n!}$

(c) $\sum_{n=1}^{\infty} \frac{(n!)^n}{(n^n)^2}$

(2) (a) Find the fifth Taylor polynomial for $f(x) = \sin x$ at $c = 0$.

(b) What does this approximation give you for sin(1)? How does it compare to what your calculator gives you for sin(1)?