

Math 128

Worksheet 3 – November 5, 2008

Name _____

1. (a) For $f(x) = \cos x$, calculate the 4th Taylor polynomial $T_4(x)$ centered at 0.
(b) Verify from the definition that the Taylor series for $\cos x$ centered at 0 is $T(x) = \sum_{k=0}^{\infty} \frac{(-1)^k}{(2k)!} x^{2k}$.
2. Find an upper bound for the error of the n th Taylor polynomial for $\cos x$ centered at 0 on the interval $[-1, 1]$. Conclude that the Taylor polynomial converges to $\cos x$ on this interval.
3. (a) Find a Taylor series for $f(x) = x \sin x^2$.
(b) Using your answer from part (a), find a Taylor series for $\frac{d^2}{dx^2} x \sin x^2$.

I also highly recommend doing some (most) of the suggested problems from sections 11.4 and 11.5!!