

Homework Assignment due Thursday 12 Oct 2006

1. Perform a Taylor expansion of the function $f(x)=x^2$ about the point $x_0=1$, writing down all nonzero terms. Show that the result is just a fancy way of writing $f(x)=x^2$.
2. The “hyperbolic cosine” function is defined to be $\cosh(x)=(e^x+e^{-x})/2$ and the “hyperbolic sine” function is $\sinh(x)=(e^x-e^{-x})/2$. Show $\cosh(ix)=\cos(x)$ and $\sinh(ix)=i\sin(x)$.
3. Chapter 17, Problem 12. (Recall the lab we did on Monday 2 October.)
4. Chapter 17, Exercise 44. (Damped harmonic motion, with numbers.)