MATH 1120	HOMEWORK #2

Use Maple to answer the following questions.
Turn in a print out of your Maple work — including the requested graphs.

1. Find the 7^{th} order Taylor polynomial centered at $x_0 = -1$ for $f(x) = e^{-x^3}\cos(x)$.
2. Plot $P_7(x)$ (found in problem #1) and $f(x)$ together. Pick a range for your x-coordinates and y-coordinates which looks nice. Of course your window should include $x = x_0 = -1$.
3. Find the maximum error allowed by Taylor's error estimate (Section 9.2 Theorem 2) committed by $P_7(x)$ on the interval $I = [-1.25, -0.75]$.
4. Find the actual maximum error committed by $P_7(x)$ on the interval $I = [-1.25, -0.75]$. (This should be smaller than your answer for problem #3).
5. Let $g(x) = x^3$. Find the 1^{st}, 5^{th}, and 10^{th} order Fourier polynomials for $g(x)$.
6. Plot the 3 Fourier polynomials (found in problem #5) together with $g(x)$. You should restrict your plot domain to $-\pi \leq x \leq \pi$.

DUE: Friday, March 27^{th}.