Second Maple HW. Due Mar. 2

Submit a cleaned up version. Hand written explanations are fine.

1. Write a Maple program that interpolates the function $f(x) = (1+x^2)^{-1}$ on the interval $[-5,5]$ at n points. Graph the interpolating functions for $n = 5, 10, 20$. Compare the different interpolations. Is the interpolation good everywhere? Find intervals where the interpolation is good and find intervals where it is bad.

2. Same as Problem 1 for $f(x) = \sin(x)$. Try intervals longer than $[-5,5]$.

3. In both problems, compare the interpolating functions with the Taylor series of f.

4. Try to find some reason why the problem behaves differently for the two functions $(1+x^2)^{-1}$ and $\sin(x)$.