Math 180/103 Winter 2011
Due 17th Nov

Homework 8

Practice Exercises from the Textbook & Notes

- Notes §2 : 1, 2, 3
- §4.1 : 9, 11, 17, 23, 27, 33, 39, 41, 52, 55, 57, 59, 61, 75
- §4.2 : 5, 7, 9, 11, 15, 19, 23, 27, 31, 35
- §4.3 : 5, 7, 11, 13, 15, 25, 27, 35, 41, 43, 51, 67, 83

Exercises Due Thursday 17th November at the beginning of class :

- Notes §2 : 2
- §4.1 : 8, 34, 36, 54, 56, 62, 70
- §4.2 : 6, 22, 26, 30, 34, 36 (hint for 36 : consider the function $g(x) = f(x) - x$)
- §4.3 : 12, 18, 20, 26, 38, 48, 68, 84

Exercise 1.

a) A function $f(x)$ has third derivative equal to $10/(1-x)$. The second-degree Taylor polynomial $T_2(x)$ at $a = 0$ is used to approximate $f(0.1)$. Find the upper bound for the error given this polynomial, ie. find the upper bound of $|f(0.1) - T_2(0.1)|$.

b) Using a linear approximation, approximate $\sqrt{100.2}$.

c) Find the upper bound of the absolute value of the error made at the previous question.

d) Find the upper bound of the absolute value of the error made by the Maclaurin polynomial of degree two $T_2(x)$ used to estimate $f(1)$ with $f(x) = e^x(x^2 - 7x + 15)$. Note : the simplest I think is to directly use the formula for the error of a Taylor polynomial.

Directions concerning the page setup for assignments : Same as usual.

Remember that there are marks for presentation and explanations, just a bunch of numbers or equations won't give you full mark.