Assignment 8 – MA 123F

Due at the beginning of class: Thursday, Nov. 18, 2010

Exercises are taken from the textbook (Stewart's *Calculus : Concepts & Contexts*, Fourth Edition).

To be handed in

Section 4.2: 6, 10, 14, 24, 30, 42, 46, 48, 52

Section 4.3: 8, 10, 12, 14, 16, 60, 64

~~**Section 4.5:** 6, 8, 10, 12, 14, 18~~

And the following problem:

(∗) Show that $\sin(x) \leq x$ for all $x \geq 0$.

Practice problems (*not* to be handed in)

Section 4.2: 5, 9, 11, 13, 27, 29, 33, 35, 41, 47, 51, 53

Section 4.3: 9, 13, 15, 17, 61, 65

~~**Section 4.5:** 5–19 odd~~

And the following problem:

(‡) (a) Show that $\cos(x) \geq 1 - \frac{x^2}{2}$ for all $x \geq 0$ (in fact, this is true for all x).
(b) Show that $\sin(x) \geq x - \frac{x^3}{6}$ for $0 \leq x \leq \pi/2$.
(c) Use problem (∗) above, part (b), and the squeeze theorem to prove that

$$\lim_{x \to 0^+} \frac{\sin(x)}{x} = 0.$$