MTH 34, Homework 2 on sections 2.2, 2.3, 2.4, 2.5

Write all your working out and answers on your own notepaper - no need to write the questions. Please use lots of space.

It is very important that you show clearly any work you had to do to get your answers. Just writing the answer down with no work shown is usually not enough.

These questions from the textbook are worth 3 points each for a total of 30:

(1) Page 48, Question 3

(2) Page 48, Question 13

(3) Page 49, Question 23

(4) Page 60, Question 2

(5) Page 61, Question 8, parts (a), (b) only

(6) Page 65, Question 23, parts (a), (b) only *(See hints below.)*

(7) Page 76, Question 3

(8) Page 76, Question 13

(9) Page 88, Question 3

(10) Page 89, Question 13

Homework should be handed in the week after it is assigned. Late homework will only receive partial credit.

If you understand the homework questions then you will be able to do the exam questions. You should also try the other questions listed on the syllabus to get extra practice. For any difficulties with the homework, please talk to me after class, come to my office hours or try the Math Tutorial Lab: CP 303.

For the skydiver in question (6), note that the force on them equals mg due to gravity minus γv due to air resistance. Since force also equals ma (Newton's 2nd law) we find, as on page 2 of the text, the differential equation

$$m\frac{dv}{dt} = mg - \gamma v.$$

In these units the gravitational constant is $g = 32ft/s^2$. Remember that weight and mass are not the same; a weight of 180lb is really a force, so that $180 = mg$. In the question $\gamma = 0.75$.

Solve this differential equation for part (a) with the initial condition $v(0) = 0$. Then integrate this solution for part (b).