SCIE1000, Tutorial Week 10, Semester 1, 2011.

- This sheet only contains one question this week. You should then work on your project.
- You really should be **very advanced** on your projects by now; they are due next week. **The requirements for submission, including the due date and time, are very strict. If you suvmit your work an hour late, you will lose all marks.** Do not leave it until the last minute!
- There is **no** computing tutorial sheet this week. Work on your projects instead.

# 1 Questions

1. (Special exam, 2010.) In class we saw that areas under curves can be calculated by using the Fundamental Theorem of Calculus and by using areas of rectangles.

   **(a)** (Worth 3 marks so about 3 minutes to work.) Describe some strengths and weaknesses of each approach (there is no need to describe the approaches). In particular, under what practical circumstances would each approach be used?

   **(b)** (Worth 6 marks so about 6 minutes to work.) The concentration of a drug in an individual's blood is measured over a period of two hours, giving the following values:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Measured concentration (mmol $L^{-1}$) | 0 | 2 | 4 | 3 | 0 | 2 | 2 |
| Time (hours) | 0 | 0.1 | 0.5 | 1.2 | 1.4 | 1.7 | 2.0 |

   Use areas of rectangles to estimate the area under the curve when the drug concentration is plotted against time, and briefly explain the physical meaning of the area.

2. Do some work on your project!

**The end**