Queen Mary
University of London

MTH4101 Calculus II, Spring 2013

Problem sheet for Tutorial 7

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- The questions are designed to help you with material covered in Week 8. You will get help with them in the tutorial on 7 or 8 March.
- You should write up your solution to the starred question (*) clearly and hand it in to your personal tutor in your assigned tutorial on 14 or 15 March for feedback. *Remember to put your full name and student number on the top of your solution.* Your marked solution to the feedback question will be returned to you in your tutorial on 21 or 22 March.
- It is important that you try to do all of the questions.

1: Find the first four terms of the binomial series for the following functions:

$$\text{(a)} \quad \left(1+\frac{x}{2}\right)^{-2}$$

$$\text{(b)} \quad (1+x^2)^{-1/3}.$$

2: Sketch the region of integration and then evaluate the following integrals:

$$\text{(a)} \quad \int_0^3 \int_0^2 (4-y^2)\, dy\, dx;$$

$$\text{(b)} \quad \int_0^{\pi} \int_0^{x} x \sin y\, dy\, dx;$$

$$(*)\text{(c)} \quad \int_0^1 \int_0^{y^2} 3y^3 e^{xy}\, dx\, dy;$$

$$(*)\text{(d)} \quad \int_0^1 \int_0^{\sqrt{1-x^2}} 8y\, dy\, dx.$$