Session 3, February 10, 2011, 12:45–16:30   Note that this semester we put a lot of emphasis on *solving problems*. Thus you are required to solve all the exercises posed for each session. It is a good idea to take the extra time to write down a complete solution to each exercise, for future reference.

Note!   We start at 12:45.

Program

1. 12:45–14:15 in G5-112. Lecture on sections 6.1 and 6.2 in [PF]. We now start the integration theory.

2. 14:15–16:30 in groups. See the list of exercises below. Note that there is extra time for solving problems today.

Exercises   I will now start posing some exam problems. Links to the exam sets are on the course home page. There are also links to the problem sets in the list below.
  Solve the exercises in the order posed.

1. Section 9.4, Exercises 1 and 2.

2. Section 9.5, Exercises 1, 2, 3, 4, 5.

3. Trial Exam June 2006, Opgave 1.

4. Trial Exam June 2005, Opgave 2.

5. Problems from the list below not solved last time. The list is repeated from Summary 2.

Important!   Write down complete solutions to the two exam problems posed today. I will check the written solutions while visiting the groups, either today, or next Thursday.

Exercises on infinite series.   For each of the series below, determine whether it is convergent, absolutely convergent, or divergent. Furthermore, for the exercises 1., 3., and 4., find the sum of the series in each case.

1. $\displaystyle\sum_{n=1}^{\infty} \frac{2^n}{3^{n+1}}$.

2. $\displaystyle\sum_{n=1}^{\infty} \frac{2^n}{n!}$.

3. $\displaystyle\sum_{n=1}^{\infty} \left(\frac{1}{n} - \frac{1}{n+1}\right)$.

4. $\displaystyle\sum_{n=1}^{\infty} \left(\frac{1}{\sqrt{n}} - \frac{1}{\sqrt{n+1}}\right)$.

5. $\displaystyle\sum_{n=2}^{\infty} \frac{1}{n \ln n}$.

6. $\displaystyle\sum_{n=2}^{\infty} \frac{(-1)^n}{n \ln n}$.

7. $\displaystyle\sum_{n=2}^{\infty} \frac{1}{n(\ln n)^2}$.

8. $\displaystyle\sum_{n=2}^{\infty} \frac{(-1)^n}{n(\ln n)^2}$.

Arne Jensen