Reading assignment May 6

- Recall the definition of a differential form on a smooth manifold M. Convince yourselves that this definition leads to a cdga $\Omega^*(M)$, the de Rham algebra of M, and that it depends functorially on the manifold M.
- Go through examples 1.5, computing the first examples of cohomologies.
- Read the section about the Mayer-Vietoris sequence (p.22ff). It will help to do this simultaneously to exercise sheet 3, in which you prove the snake lemma. Make sure you understand why the construction of the connecting homomorphism in the snake lemma is very explicit for the de Rham complex $\Omega^*_{dR}(-)$ using partitions of unity.
- Work through exercise 2.6 in detail, which computes the cohomology of the circle. (If you attended Algebraic Topology last semester, recall how long it took us to compute the singular homology of the circle, and note how easy it is to compute its de Rham cohomology.)
- Read the definition, examples, and Mayer-Vietoris sequence for compactly supported cohomology (p. 18, p. 26 & 27). Note that the functoriality is reversed for compactly supported cohomology!