WS 2017/2018 Dr. Milena Pabiniak

From Calculus to Cohomology

Homework 9

Exercise 1. Let U and V be open subsets of a smooth manifold, such that U, V and $U \cap V$ have finite dimensional de Rham cohomology. Prove that

$$\chi(U \cup V) = \chi(U) + \chi(V) - \chi(U \cap V).$$

Exercise 2. Give an example of a Morse function on $\mathbb{R}P^n$ and use it to find $\chi(\mathbb{R}P^n)$ Hint: look at example 12.10.

Exercise 3. Exercises 12.1, 12.2, 12.5.

Suggested Exercise 1. Exercises 12.10, 12.7, 12.4.

These exercises are to be discussed on Tuesday January 16th.