

- Use differential forms to build up topological invariants
- Compute the invariants from local-to-global principle: Mayer-Vietoris sequence
- Submanifolds and vector bundles are topologically captured by cohomology classes (Poincare duals, Chern classes)
- Study Lie group actions and their quotients; Integrate infinitesimal actions using Frobenius theorem
- We may go to Morse theory, which gives a way to extract the global topology by using critical points and gradient flows of a function

Manifolds  $\xrightarrow{\text{de Rham cohomology}}$  vector spaces

