

FINAL PROJECTS

Here are some potential final projects. (The project should be ≥ 5 pages LaTeXed, but it doesn't have to be more than that.) If you wish to do something else, just clear it with me. You'll have to track down references for these things if I have not provided them.

- (1) Proof of the Auslander-Buchsbaum theorem that regular local domains are UFDs.
- (2) Proof of Quillen-Suslin theorem on projective modules over a polynomial ring.
- (3) Proof of the equivalence of the category of projective $C(S)$ -modules of finite rank and the category of vector bundles on S when S is a connected compact Hausdorff space. (See Swan's 1962 TAMS paper "Vector bundles and projective modules".)
- (4) Proof of Mitchell's embedding theorem.
- (5) Motives as a unification of cohomology theories—give an overview.
- (6) The Special Adjoint Functor Theorem: proof and applications.
- (7) The Eisenbud-Evans theorem: proof and applications.