

# Exercise sheet 1

Manifolds, MTH406

1. For the sphere,  $S^2$ , prove that:
  - (a) The stereographic projections from the north pole and south pole form an atlas.
  - (b) The
2. Prove that if  $X_p$  is a derivation at  $p \in M$ , then  $X_p(c) = 0$  for any constant function  $c$ .