HW 5 (to be submitted by Mar 25)

1. (15 marks) Prove that the Möbius bundle is a line bundle over the circle and that every smooth section vanishes somewhere.

2. (10 marks) If M is a smooth manifold-with-boundary, prove that TM can be constructed as a smooth manifold-with-boundary such that on the interior M^0, it is isomorphic as a vector bundle with TM^0, and smooth vector fields on M are smooth sections of TM.