

1. For a (M, Ω) an oriented manifold, and $f : M \rightarrow M$ a diffeomorphism, say that f is orientation reversing if $f^*(\Omega) = \lambda\Omega$ for some $\lambda \in C^\infty(M)$ with $\lambda < 0$. If M is connected, show that every diffeomorphism $f : M \rightarrow M$ is either orientation preserving or orientation reversing. Give a counterexample when M is not connected.
 - (Boothby pg. 219 #4) Compute the natural volume form on S^2 in coordinates. Choose spherical coordinates or stereographic coordinates or both if you want.
 - (Boothby pg. 226 #2) Practice computing exterior derivatives.