Math 550
Homework 6, Addendum
Dr. Fuller

These problems will not be collected.

1. The manifold $\partial \mathbf{H}^k$ can be oriented as the boundary of $\mathbf{H}^k$ with the usual orientation. It can also be oriented using the usual orientation of $\mathbf{R}^{k-1}$ (using the obvious identification of $\partial \mathbf{H}^k$ with $\mathbf{R}^{k-1}$). Prove that these orientations agree if and only if k is even.

2. Suppose that M is an n-dimensional manifold-with-boundary in $\mathbf{R}^n$ with non-empty boundary, so that ∂M is an $(n-1)$-dimensional manifold. Assume that M is oriented with the usual orientation in $\mathbf{R}^n$. Prove that the vectors n_x and N_x (as defined in class) agree for $x \in \partial M$.