MAT 540, Homework 2, due Wednesday, Sept 11, in class

Manifolds with boundary: please do **questions 1-11, 2-4, and 1-12** from Lee's textbook.

Tangent vectors and derivations: please read pp. 54–65 about tangent vectors as derivations. We started discussing this material and will continue next week. We have discussed derivations in $\mathbb{R}^n$ but swept some of the small details about $\mathbb{R}^n$ under the rug, so please read pp.50–54 carefully as well. Please also read pp. 71–73 for alternative definitions of T_xM (we discussed equivalence classes of curves in more detail than the book does.) Please do **questions 3-7 and 3-8**. In 3-8, please also show that the map is a linear isomorphism if the vector space structure on $\mathcal{V}_pM$ is inherited from $\mathbb{R}^n$ via charts, the way we discussed in class.

Please also do **question 2-7**.