

Problems are typically taken from either Jeffrey Lee's text *Manifolds and Differential Geometry* (MDG) or John Lee's text *Smooth Manifolds* (SM). I've also written a few problems. Most problems 5pts here.

- Problem 67** SM Exercise 14-17 page 361. (make ample use of theorems for covariant tensor pull-back, this should not be a hard exercise)
- Problem 68** SM Exercise 14-31 page 369. (formula connecting a Lie Bracket and an exterior derivative)
- Problem 69** SM Problem 14-1 page 373. (wedge product and linear dependence)
- Problem 70** SM Problem 14-5 page 373. (Cartan's Lemma)
- Problem 71** SM Problem 14-6 page 373. (two-form calculation in \mathbb{R}^3)
- Problem 72** SM Problem 14-7 page 373. (differential form fun)