

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. 5pts per problem here.

Problem 47 SM Problem 9-3, page 245 (you pick two)

Problem 48 SM Problem 9-17, page 247

Problem 49 SM Problem 9-18, page 247

Problem 50 SM Exercise 11.3, page 273

Problem 51 SM Exercise 11.5, page 274

Problem 52 SM Exercise 11.7, page 274

Problem 53 SM Exercise 11.21, page 281 (don't do all of it, pick an interesting part)

Problem 54 SM Problem 11-5, page 300 (I suspect this is easy with the right theorem in mind)

Problem 55 SM Problem 11-7, page 300 (pullback calculation)

Problem 56 SM Problem 11-14, page 301 (exactness of vector fields, I hope the calculation here is not too horrible)