

Math 31CH Spring 2018 Written Homework 2, due  
4/20/2018 in HW box in the basement of AP&M  
by 4 pm

## Reading

Finish reading Chapter 6 and Read Sections 7.1 and 7.2 of the text.

## Exercises to submit on Friday 4/20

### Exercises from the text

Write out each answer as a careful proof, in full sentences.

**Section 6.3:** #1, 2, 5(a)(c), 10

**Section 7.1:** #2, 3, 5, 7, 9(a)

Comments: In 6.3 #1, 2, it may be difficult to prove rigorously that the indicated sets are not manifolds. In both cases the set is given by a parametrization as in Definition (3) of a manifold on page 262. Concentrate on carefully showing what part of Definition (3) does not hold in each case.

What 6.3 #5 wants you to do is show directly that the example satisfies all three versions (1)-(3) of the definition of a manifold, by finding explicit functions which give it locally as a graph, as a level set, or which parametrize it near each point.