

# MATH 241 HOMEWORK 6, FALL 2019

WEEK OF OCTOBER 7; DUE FRIDAY OCTOBER 18

Reading: §5.1–§5.5 of Haberman. Note that the summary of properties of *regular* Sturm–Liouville eigenvalue problems on page 157 involves the Rayleigh quotient, which is explained in §5.6 (not in the syllabus). The relation of the Sturm–Liouville eigenvalue problems and the variational problem of minimizing the Rayleigh quotient is explained in class.

Part 1. From the book *Applied PDE* by Haberman.

- Exercise 5.3.9
- Exercise 5.4.3, 5.4.4

Part 2. From old final exams.

- Fall 2012 final exam, question 5
- Fall 2013 final exam, question 5
- Spring 2014 final exam, question 8
- Fall 2015 final exam, problem 4 (a), (b); part (c) extra credit.