

AA210A Homework 1 2020 -2021

Due Wednesday September 23

Read: Chapter 1 and Appendix A

Problems:

Chapter 1 - Problems 2, 3, 5, 6 and 7

In section 1.2 (continuity), sections 1.6 and 7 (momentum) and section 1.8 (energy) the partial differential equations governing compressible fluid flow are derived using a balance of mass, momentum and energy over a rectangular control volume fixed in space. Take the time to carefully go through these sections to insure that you fully understand the process and that you understand the origin and meaning of each term in the equations of motion. There is no need to turn in anything here, but if you invest a bit of time to do this it will be invaluable later as we learn how to manipulate the equations and use them to solve problems.

Appendix A provides some of the kinetic theory background needed to understand the origin of pressure, viscosity, heat capacity and thermal conductivity in gases.

Academic paper – Provide a tentative title and one paragraph description of the article you plan to write. Indicate the main references that you have identified thus far and summarize the salient history and technical challenges of the subject.