

Astron 299/L&S 295 Problem Set 5

Given: Oct 12. Due: Wednesday, Oct 19 at the beginning of class

Homework Policy: You can consult class notes and books. Always try to solve the problems yourself; if you cannot make progress after some effort, you can discuss with your classmates or ask the instructor. However, you cannot copy other's work: what you turn in must be your own. Make sure you are clear about the process you use to solve the problems: partial credit will be awarded.

Reading: Kutner Chapters 10, 11, 8.3, 8.4

Problem 1 Kutner 11.1

Problem 2 Kutner 11.5

Problem 3 Kutner 8.3

Problem 4 Kutner 8.6

Problem 5 Order of Magnitude: Trees and Opacity

- a. If all the leaves of a tree fall to the ground, about how many leaves thick would the layer on the ground be?
- b. What is the (order-of-magnitude) optical depth presented by the leafy tree to someone lying below the tree?
- c. Why does this answer make sense from the perspective of the vegetation/biology. (Be the tree.) How are parts A and B related?