Due Date: September 21

Be sure to show all of your work and clearly indicate your final response to each question

1. Chapter 5, Problems 1, 4, and 6.
2. Chapter 5, Problem 7 for utility functions given in 1, 4, and 6.
3. Chapter 5, Problem 9 for utility functions given in 1, 4, and 6.
4. Chapter 5, Problem 10 for utility functions given in 1, 4, and 6.
5. Let an individual’s utility function be defined by

   \[ U(x_1, x_2) = -\exp(-5x_1 - 3x_2). \]

   The prices of the two consumption goods are denoted \( p_1 \) and \( p_2 \), and the individual’s income is fixed at \( I > 0 \). Derive the demand functions for \( x_1 \) and \( x_2 \). [Hint: This utility function is a positive monotonic transformation of one of the utility functions with which you worked in the first three questions of this assignment, so that the demand functions should be the same (in our notation, \( x_1 \) is the book’s \( x \) and \( x_2 \) is the book’s \( y \)).]

6. Repeat question 4 after substituting the utility function

   \[ U(x_1, x_2) = \sqrt{x_1} + x_2. \]

   This utility function is not a monotonic transformation of any with which you have worked in this assignment.