Tufts University
Department of Mathematics
Spring 2022

MA 166: Statistics

Homework 9 (v1.1) [1]

Assigned Monday 11 April 2022
Due Tuesday 19 April 2022 at 11:59 pm EDT.

1. Larsen & Marx, Problem 11.2.20, p. 541

2. Larsen & Marx, Problem 11.2.28, p. 543

3. Larsen & Marx, Problem 11.3.6, p. 556

4. Larsen & Marx, Problem 11.3.10, p. 556

5. You have reason to believe that the *positive quantities* x and y are related by an equation of the form
$$e^{a+bx} + e^{-cy} = 1.$$
   (a) Prove that c must be positive.
   (b) Suppose that you have n pairs of *positive numbers*, (x_i, y_i) for $i = 1, \ldots, n$, and you would like to find the best fit for all three parameters a, b and c. You might think that this would require solving three simultaneous nonlinear equations in three unknowns. Find a way to do it that involves solving only one nonlinear equation for the unknown parameter c.