ECE 4260

Problem Set #4

Date assigned: February 3, 2017
Date due: February 13, 2017

Reading: Chapter 5 in S & W.

Reminder: Quiz #1 will be Wednesday February 15, 2017. One $8\frac{1}{2}'' \times 11''$ handwritten sheet
is allowed.

Problem 4.1

Work problem 4.21 parts a, b, and c in Stark & Woods. You must derive the values and not just use
Table 4.3-2.

Problem 4.2

Work problem 4.27 in Stark & Woods. You should be able to do this problem almost by inspection.
Part (c) should read: Consider what happens when $\rho = -1$, $\rho = 0$, and $\rho = 1$. Is it always true that
averaging two variables reduces the variance?

Problem 4.3

Work problem 4.30 in Stark & Woods. You should do this problem by inspection.

Problem 4.4

Work problem 4.34 in Stark & Woods. You must understand Example 4-3.4 first.

Problem 4.5

Work problem 4.46 in Stark & Woods. Note that finding the mean using an integral does not necesarily
yield a unique result. Use symmetry instead.

Problem 4.6

Work problem 4.47 in Stark & Woods. CF is the characteristic function. Derive the answer by eval-
uating the integral without using either a table or integration software. Then use the result to find the
second moment.

Problem 4.7

Work problem 4.54 in Stark & Woods *without MGFs or CFs*. Use properties of Poisson processes to
arrive at an answer

Problem 4.8

Work problem 4.55 in Stark & Woods using CLT ideas.