

AM 1650: Homework # 5 (due Oct 25)

The book we refer to is Wackerly, Mendenhall & Scheaffer, *Mathematical Statistics with Applications* (6th Edition).

- Read Chapter 5 (skip Section 5.10).
- Solve problems 4.46, 4.47, 4.50, 4.60, 4.77.
- Solve problems 4.142. Also answer the following questions. Given that the applicant with an 8:15AM appointment has to wait,

1. What is the probability that the waiting time is more than 20 minutes?
2. What the expected value of the waiting time?

- Calculate the following two-dimensional integrals

$$\iint_D f(x, y) dx dy.$$

1. $D = \{(x, y) : 0 \leq x \leq 1, 0 \leq y \leq 1\}$, and $f(x, y) = x + y + xy$.
2. $D = \{(x, y) : 0 \leq x \leq 1, y - x \leq 1\}$, and $f(x, y) = xe^y$.
3. $D = \{(x, y) : x^2 + y^2 \leq 1, y \geq 0\}$, and $f(x, y) = y$.
4. $D = \{(x, y) : 0 \leq x \leq y, x + y \geq 2\}$, and $f(x, y) = e^{-(x+y)}$. Hint: Split domain D into two pieces.
5. $D = \{(x, y) : |x| + |y| \leq 1\}$, and $f(x, y) = 2$. Hint: You do not need to go through integrals since f is a constant.