STAT/MA 41600
In-Class Problem Set #31: October 24, 2018

1. Suppose that X is a continuous uniform random variable, with a constant probability density function on $[-3, 3]$. What is the CDF of X?

2. Suppose X has density $f_X(x) = 1/5$ for $0 < x < 5$, and $f_X(x) = 0$ otherwise. Suppose that Y has density $f_Y(y) = 2e^{-2y}$ for $y > 0$, and $f_Y(y) = 0$ otherwise. Also suppose that X and Y are independent. Find $P(Y > X)$.

3. Consider three independent random variables X, Y, Z that are each uniformly distributed on the interval $[0, 20]$. Let V denote the minimum of these three random variables. Find the expected value of V.

4. Suppose that the pair of random variables X, Y has a constant joint probability density function on the triangle with vertices at $(-5, 0)$, $(5, 0)$, $(0, 5)$. Find the expected value of Y.