ECE 353 : Probability and Random Signals
Homework 6
Spring 2019

Due May 14, 2019

1. Suppose X is a uniform random variable on the interval (0,1) and $Y = 5X + 2$.
   (a) Find the CDF of Y.
   (b) Find the PDF of Y and sketch it.
2. Let X be a geometric random variable with parameter p and n be a nonnegative integer. For what value of n is $P(X = n)$ maximum? What is the probability that X is odd?
3. Let X be uniformly distributed on $(-\pi, \pi)$ and $Y = \cos(X)$. Find the PDF of Y.
4. Let X be a continuous with the cdf $F_X(x)$. Let $Y = F_X(x)$. Show that Y is a uniform random variable over (0,1).