Statistics 211
In-Class Assessments
Topic: Chapter 7
Date: Oct. 24, 2016

1. Consider a continuous random variable X with pdf

$$f(x) = \begin{cases} \frac{1}{5}, & x \in [1,6] \\ 0, & x \notin [1,6] \end{cases}$$

   (a) What is $P(X > 4.5)$? Answer to two significant figures.
   answer: 0.3

   (b) What is $P(1 < X < 3.5)$? Answer to two significant figures.
   answer: 0.5

   (c) What is $E(X)$? Answer to two significant figures.
   answer: 3.5

   (d) What is $P(X = 3.5)$? Answer to two significant figures.
   answer: 0

2. Let $X \sim N\left(\mu = 10, \sigma^2 = 1.5^2\right)$.

   (a) Using the approximate "68/95/99.7" rule, what is $P\left(5.5 < X < 13\right)$? Answer to four significant figures.
   answer: 0.9735

   (b) What is the distribution of $Z = \frac{X-10}{1.5}$?
      i. χ^2_m
      ii. Binomial(n, p)
      iii. $N(\mu = 10, \sigma^2 = 1.5^2)$
      iv. $N(\mu = 0, \sigma^2 = 1)$

   answer: d