Econ 241A Probability, Statistics and Econometrics
Fall 2017

Problem Set 3

1. Let $A = \{X \geq 2\}$ and $B = \{|X - \mu| \geq \sigma\}$.
   Consider these two distributions:

   (i) Rectangular on the interval [0,2],

   (ii) Exponential ($f(x) = \lambda e^{-\lambda x}$) with parameter $\lambda = 1$.

   For each distribution,

   (a) Use the Markov or Chebyshev Inequality to calculate an upper bound on $P(A)$ and $P(B)$.

   (b) Use the appropriate cdf to calculate the exact $P(A)$ and $P(B)$.

   (c) Comment on the usefulness of the inequalities.

In addition, solve the following problems from Casella and Berger: 2.33, 4.1, 4.2, 4.5, 4.6 and 4.10.