AMS 102.7 Homework #5

DUE: 3/22/2012

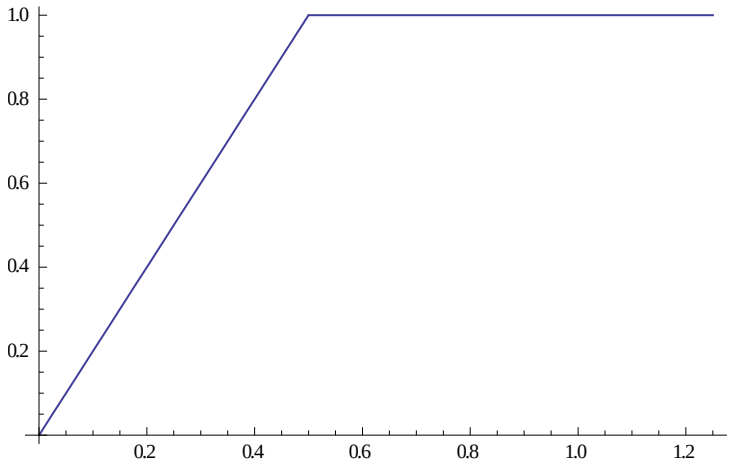
SHOW ALL WORK!!

1) Consider a large bag of coins, consisting of only quarters ($0.25), dimes ($0.10) and nickels ($0.05). 40% of the coins are nickels, 35% are dimes.

   a. Randomly select 5 coins from the bag with replacement (ie, the probabilities don't change after a coin is selected). What is the probability that your selection is worth at least $1. (Hints: Use Binomial Distribution, think about the different ways you can make a dollar and how you can translate that into a success/failure problem)

   b. Find the average value and standard deviation of a coin in the bag. (Hint: The coins in the bag form a PMF).

2) Consider the following function: $f(x) = \begin{cases} 2x & 0 \le x \le \frac{1}{2} \\ 1 & \frac{1}{2} \le x \le \frac{5}{4} \\ 0 & otherwise \end{cases}$



   a. Verify this function satisfies the properties of a PDF
      i) Always positive
      ii) Area under curve =1

   b. What is the probability of a RV described by the function above taking on a value between 0 and 1?

   c. What is the median of this distribution? (Hint: Think about what the median represents in terms of a percentile!)