

## Homework 3

Due Wednesday, September 16

WMMY: Ch 3 # 1,3,7\*,9\*,17\*,19\*,25,27\*,29\*,31\*,71

\* For these problems, sketch the PDF and CDF (if you found it), and shade any areas under the PDF which correspond to probabilities you're supposed to calculate.

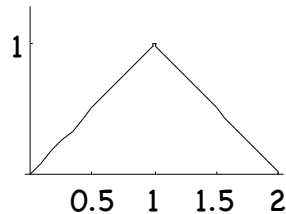
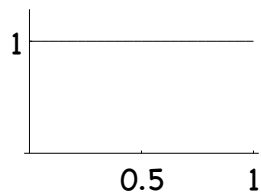
**Problem A:** Consider an experiment where you roll two dice, and subtract the smaller value from the larger value (or get 0 in case of a tie) to get a random variable  $X$ .

- a. What is the probability of getting 0?
- b. What is the probability of getting 4?
- c. Draw the probability distribution function for  $X$ .

**Problem B:** In an experiment where you roll two dice, let  $X$  be the random variable which is the product of the two dice.

- a. Make a table with possible values of  $X$  and their probabilities.
- b. Draw the CDF for  $X$ .

**Problem C:** Recall that an ideal spinner has a uniform, continuous probability distribution as shown on the left. If you spin twice and add the two results, you get the continuous distribution shown on the right.



- a. What is the probability that one spin is between .8 and 1?
- b. What is the probability that one spin is not between .4 and .6?
- c. What is the probability that the sum of two spins is less than 1?
- d. What is the probability that the sum of two spins is more than 1.5?
- e. What is the probability that the sum of two spins is between .5 and 1.5?