

1. Same setup as HW1 #2. A tetrahedral die is rolled twice. All 16 possible rolls are equal.

Math 461
HW 2
Handwritten
Due Fri 9/11 10AM

$$\left\{ \begin{array}{l} (1,1), (2,1), (3,1), (4,1), \\ (1,2), (2,2), (3,2), (4,2), \\ (1,3), (2,3), (3,3), (4,3), \\ (1,4), (2,4), (3,4), (4,4) \end{array} \right\}$$

For a given roll (i, j) , let $X(i, j) = i$ and $Y(i, j) = j$.
(That is, X is the first number and Y is the second.)

- (a) Determine the frequencies and cumulative distribution function for X
- (b) Do the same for $X - Y$
- (c) What are $\text{Expect}(X)$ and $\text{Var}(X)$?
- (d) What are $\text{Expect}(X - Y)$ and $\text{Var}(X - Y)$?

2. Same setup as HW1 #3. Two cards chosen successively from a set of four.

$$\left\{ \begin{array}{l} (1,2), (2,1), (3,1), (4,1) \\ (1,3), (2,3), (3,2), (4,2) \\ (1,4), (2,4), (3,4), (4,3) \end{array} \right\} \left. \begin{array}{l} \text{All 12} \\ \text{equally} \\ \text{likely} \end{array} \right\}$$

Same questions (a), (b), (c), (d) as in #1

3. A point X is chosen at random in the interval $[-2, 3]$. Determine the cdf of its value.