HOMEWORK 3: MATH 3215-C (PROBABILITY AND STATISTICS)

DUE MONDAY, SEPTEMBER 7TH, 8 P.M. ATL

All problems are worth 2 points (20 total) and you can get a partial point.

Problem 1. *There are 100 fish in a pond, some of which are Smallmouth bass and the rest are Bigmouth bass. Every day for a month the game fish manager randomly catches 5 different fish, records the number of Smallmouth bass in that day's sample, and releases them back into the pond. His records are displayed below*

$$\{1, 2, 1, 1, 3, 0, 2, 2, 1, 1, 1, 1, 2, 0, 1, 0, 2, 4, 3, 2, 1, 1, 2, 3, 2, 3, 0, 0, 2, 1\}$$

(1) Draw the relative frequency histogram of the data.

(2) Make an educated guess for the number of Smallmouth bass in the pond.

Hint: you can use the interactive histogram in

https://petrosyan.page/fall2020math3215

Either open the page Week 2-3 and press on "Show widgets" to get the interactive histogram, or open the Binder and run the notebook there.

(3) Is this more a Statistics problem or a Probability Theory problem?

Problem 2. *Suppose* $\text{Range}(X) = \{2, -1, 0, -5, 6.4\}$ *and the pmf of* X *is*

$$f(-1) = 0.02,\ f(2) = 0.2, f(6.4) = 0.1, f(-5) = 0.33.$$

Compute and draw the cdf of X*. You may draw on a paper or plot it with some software.*

Problem 3. *Do problem 2.1-8.*

Problem 4. *Do problem 2.1-14.*

Problem 5. *Do problem 2.1-17.*

Problem 6. *Do problem 2.2-2.*

Problem 7. *Do problem 2.2-4.*

Problem 8. *Do problem 2.2-6.*

Problem 9. *Do problem 2.2-8.*

Problem 10. *Do problem 2.2-12.*