



Name_____

Section_____

**DEPARTMENT OF STATISTICS
The Wharton School
University of Pennsylvania**

Statistics 405/705

Spring 2019

QUIZ #5

Instructions

1. Place your name and section at the top of this page.
2. Keep this side up until you are told to begin.
3. This is a closed-book quiz. You may use a calculator.
4. Circle the single best answer to each question.
5. You will have exactly 10 minutes to complete the quiz.

1. Which of the following probability distributions always results in a random variable that takes on values between 0 and 1?
 - A. Binomial.
 - B. Exponential.
 - C. Geometric.
 - D. Beta.**

2. What's the approximate output of the R command `pnorm(q = -2)`?
 - A. 0.16.
 - B. -1.96.
 - C. 0.05.
 - D. 0.025.**

3. If you were to create a Poisson/Gamma mixture, then which of the following features would you expect to see in the mixed distribution (which happens to be negative binomial)?
 - A. It will have a lighter right tail than the Poisson distribution with the same mean.
 - B. It will have a heavier right tail than the Poisson distribution with the same mean.**
 - C. It will be more symmetric than the Poisson distribution with the same mean.
 - D. It will be less outlier prone than the Poisson distribution with the same mean.

4. Why use a multivariate distribution in a simulation, rather than lots of independent univariate distributions?
 - A. Because multivariate distributions are faster to simulate from.
 - B. Because multivariate distributions only take on discrete values, which is a more realistic assumption.
 - C. Because multivariate distributions can incorporate a dependence structure between the variables.**
 - D. It's just a matter of taste as to whether you choose to use a multivariate distribution, because the results from the simulation would be the same as if you had used independent univariate distributions instead.

5. What's the most reasonable output to be expected from the commands;

```
quantile(ecdf(
  sample(x = 1:100, size = 100000, replace=TRUE)
), probs = 0.5)
```

- A. 100.
- B. 51. (essentially, the median of the discrete uniform distribution, on 1:100).**
- C. 25.
- D. 0.5.