Math 5710 Wednesday, 7/22/20 Quiz 22

1. What is your name?

2. In Glossary Entry 044B, geometric random variables are classified as *discrete* rather than *continuos*. However, Rice is quoted in that note as follows: " The **geometric distribution** is also constructed from independent Bernoulli trials but from an infinite sequence."

   Write a paragraph that explains why Rice's statement is accurate although geometric random variables are discrete functions rather than continuous functions.

Sample explanation:

A discrete function is either finite are countably infinite. In the case of a geometric random variable the number of trials k is such that $k \in \mathbb{N}$ and $| \mathbb{N} | = \aleph_0$. The cardinality of continuous random variables is $\mathcal{C}^n$ (as indicated by Glossary Entry 045).

---

3. Also write a paragraph that explains why for a geometric experiment that for k trials, it is necessary for k to be an element of { 1, 2, 3, ... } rather than { 1, 2, 3, ..., n } for some natural number n }.

Sample explanation:

A geometric experiment is executed until the k^{th} trial results in the occurrence of a successful event. Theoretically, a successful event may not occur in our lifetimes (that would be unlikely) but we need to allow for the possibility that k could be a super large natural number.

---

3. Smile.