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CIS 2033 – Lab HW #2

M4.2. (20p)

1. ***Binomial Distribution***

A random variable X follows the *binomial distribution* with parameters n and p, X ~ Bin(n, p), when its probability mass function is given as:

, for *k*={0, 1, 2, …, n} number of successes



And when the cumulative distribution function of X ~ Bin(n, p) is given as:



It seems when the p = 0.5, carve is setting in the mean of dataset. Once the value of p is increased, it will be shifted into right, and it will be to the left when p is decreased. Also, the peak of the plot is getting high.

1. ***Geometric Distribution***

A random variable X follows the *geometric distribution* with parameters p, X ~ Geo(p), when its probability mass function is given as:

, for *k*=1, 2, …



And when the cumulative distribution function of X ~ Geo(p) is given as:



It seems when p is 0.5 and higher, the curve almost close to 1, and when p is small, it’s less in its probability.